

MODEL AIRPLANE NEWS

13th Year of Publication

AUGUST, 1941

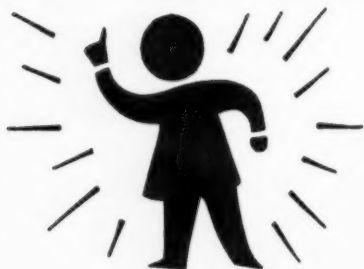
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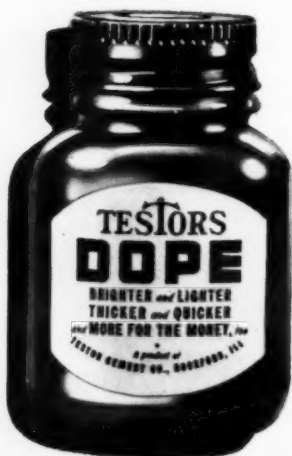
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ON THE BEAM

AMERICA IS IN a state of emergency and now—we have a job to do—but—what will each of us contribute? The production of modern war weapons requires specialized scientific knowledge and long careful training in particular lines of endeavor. This is especially true in the airplane industry where precision and high degree of accuracy are required.

FROM WHENCE WILL come the engineers, managers, draftsmen, designers, metal workers, woodworkers, machinists and others required to build the defense of America? Ten years of slowed production has produced only a limited number of men who are qualified, and now training schools are overcrowded, endeavoring to acquaint workers with the fundamentals of creating airplanes.

ONE SCHOOL, HOWEVER, has given systematic training in these principles for many years; simultaneously contributing to the health and pleasure of its 1,000,000 serious students. It is the school of model airplane designing, building and flying.

INSPIRED, YET WITHOUT clamor, aeromodelers have explored every cranny of this science, impelled by the desire to create. Hours of research have provided complete understanding of aeronautic principles; days and even nights at the work bench have bred accurate, dextrous fingers, coordinating mind and hand; ideas of doubtful accuracy have been moulded into graceful, synchronized mechanisms by long periods of flying.

KNOWLEDGE OF plane types—parts—design of structures—drafting—motor design and operation—properties of wood and metal—aerodynamics—applied science—and the technique of creation—is all an inherent part of their nature.

NOW THEY STAND PREPARED, ready to match the genius of skilled craftsmen. Already hundreds are applying their art in factories throughout the country; transforming it into the winged defense of America. They have not let America down, but instead have turned so-called child's play into aeronautical skill, the greatest instrument for our preparedness.

THE EDITOR.

13TH YEAR OF PUBLICATION

MODEL AIRPLANE NEWS



AUGUST, 1941

VOL. XXV, No. 2

CONTENTS

FEATURE

Meet the Nationals 6

GAS POWERED

The Flounder Takes Wing . . . 16

RUBBER POWERED

The Rocket Stick Contest
Winner 14
The Howard Trainer in
Miniature 28

SCALE MODEL PLANS

Curtiss SBC-3 10
The Curtiss 20 Transport . . . 26
Heinkel 114 36
Fairey Swordfish 36
Heinkel 60 36
Arado 95S 36

PLANE ON THE COVER

Air Line Giant 27

DESIGN

Model Designing Simplified . . 22

AERO SCIENCE

Spiral Stability and How to
Attain It 9
Tricks of the Trade 12
Stepping Up Your Power . . . 13
Why Not Club Contests? . . . 27

NEWS

Academy of Model Aero-
nautics 13
Frontiers 15
Gas Lines—Air Ways 20
The East Gets Together . . . 25
Air Youth of America 33
Flash News 37

Edited by
Charles Hampson Grant

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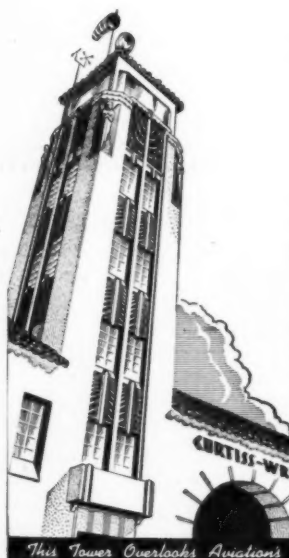
Model Airplane News - August 1941

WILL YOU BE KICKED OFF

*at the end
of the line?*



AVIATION HAS JOBS FOR THOUSANDS BUT CAREERS ONLY FOR TRAINED MEN



THERE will be no depression in the aircraft industry at the end of this national emergency. Aviation will become a greater field than ever because of the air-mindedness engendered by the dominant part taken by airplanes in modern warfare. BUT . . . the supercharged production line of war effort will drop to the normal level of peace time production. The industry is now forced to accept thousands of men . . . many untrained, many inadequately trained, many trained only for single phase operations. Its great need is leaders for these thousands, men properly trained to fill vital supervisory positions. When the pressure is relieved, these men—AND ONLY THESE MEN—can look forward to a career in aviation. Their future is assured and their livelihood is not contingent on national emergency. YOU can become one of these career men. BUT ONLY IF YOU CHOOSE THE RIGHT SCHOOL FOR YOUR TRAINING. . . . That school is Curtiss-Wright Technical Institute!

Located in the very center and a very important part of Southern California's great aircraft industry, with its more than a billion dollars in unfilled orders, Curtiss-Wright Tec has come to be recognized as the nation's leading institution for the training of Aeronautical Engineers and Master Mechanics. Mr. Donald Douglas, President of the great Douglas Aircraft Company, chose this school for his own son's training, which pointedly indicates the high standing Curtiss-Wright Tec has

attained in the aircraft industry since its establishment in 1929.

It is imperative that before you invest in a course of career training you determine what the returns will be on your investment . . . for your choice of a school in which to take your training will determine how much money you will make all the rest of your life.

Curtiss-Wright Tec's career training is carefully designed to do just one thing—TO MAKE MONEY FOR YOU, so upon graduation you can be independent and self-supporting for life. Our thousands of successful graduates have proven that Curtiss-Wright Tec training gets results and always pays, since it trained them in advance for the highest position they could ever expect to occupy. It can do the same for YOU.

This school has never guaranteed positions for its graduates, but practically every graduate has obtained immediate employment and is advancing rapidly. The demand for our graduates far exceeds the supply, and we honestly believe that every student who enrolls here will be able to obtain, with our assistance, immediate employment upon graduation.

WARNING!—"Don't miss the boat." The greatest opportunity in your lifetime exists today! There never was such an opportunity in aviation for you; there may never be another. A position awaits you. Insure for yourself a steady income and independence for life. **DON'T FOLLOW—LEAD!** Send in your enrollment before you "miss the boat."

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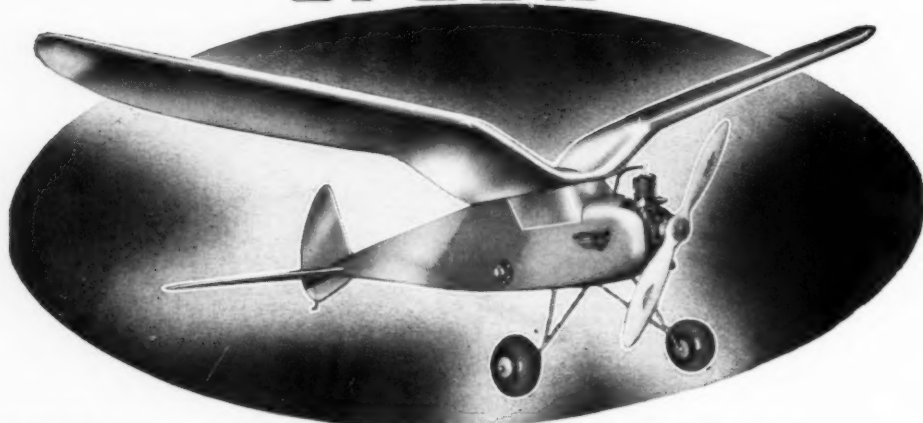
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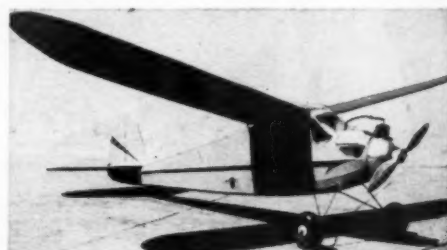


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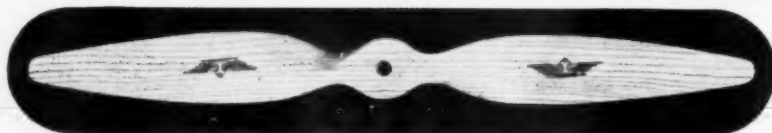


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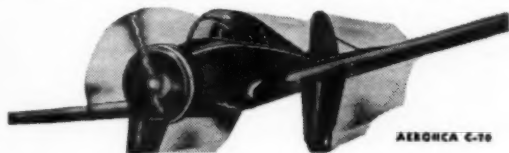
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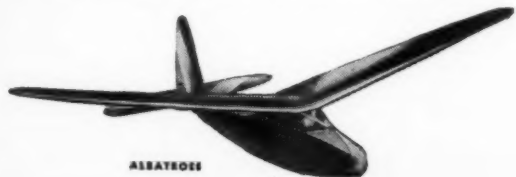
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AERONCA C 70. A trim sport model and an outstanding flyer. Easy to build. The Aeronca is the leading ship of one of the best known American aircraft companies. Famous for its speed. 40" Wing Spread.

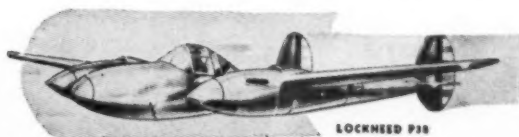


AERONCA C-70

ALBATROSS GLIDER. This handsome glider model has repeatedly made flights of an hour or more. We believe it is the finest glider, in design and parts, offered at anywhere near this low price. 45" Wing Spread.



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LOCKHEED P 38. Lockheed's newest fighting plane, heralded as the fastest interceptor pursuit plane in the world. Has received a great deal of publicity, due to its unusual double-tail design and tremendous speed which has reached 420 m.p.h. An important part of any modeler's collection. 38" Wing Spread.



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REARWIN SPEEDSTER. A favorite sport and private-owner ship. Widely used by individual flyers. As a scale model, it is a very sweet flyer, fast and steady. Plenty of interest with big wing span. 40" Wing Spread.



CLOUD HUNTER

CLOUD HUNTER. This is an enlarged design of Modelcraft's famous Pacific Ace—the largest selling 25c rubber model ever introduced. The big span makes it an even better, more graceful flyer. 40" Wing Spread.

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ALBERT LEWIS Asks You To

HERE you are, at last, at the National Model Airplane Championships in Chicago! Glad to meet you!

You certainly had to work hard enough to scrape together the necessary finances to come, didn't you? But now that you're here, you don't want to miss a thing, and we're going on a tour of inspection with you and see that you meet some of the outstanding model aero leaders and contestants.

First of all, did you register at the Hotel Sherman, official contest headquarters? Rates are certainly reasonable enough for the modeler and his friends—\$1 a piece per

MEET the

NATIONALS

An Old Timer Introduces You To Thrilling Experiences and Prominent Modelers of the 1941 National Model Airplane Competition

night, and what if there are a half dozen to each room. All the better chance of seeing some new models, new ideas in design, beautifully covered jobs—as a matter of fact, more models than you ever thought existed.

Quick, look over there—see, there's Leon Shulman and his gang from the Kresge Aero Club of Newark, New Jersey. That sleepy-looking guy with Leon is Ben Shershaw, designer of the Bantam engine and a flock of sleek, streamlined gas jobs.

Where were we? Oh, yes, about housing accommodations—if you're equipped with camping facilities, you can set up house-keeping at the special camping site provided by the sponsors of the meet at the outdoor airport, 79th Street and Keeler Avenue.

First of all, you should register. Up here on the mezzanine floor of the Sherman, the

contest officials from the Chicago Park District, aided by Chicago *Times* men, have established headquarters for the duration of the meet. Since you sent in your entry fee by mail prior to coming all you have to do is get in line with about 500 other modelers and claim your all-important contestant's kit.

What's the kit for? Tsk, tsk—such ignorance—but you said this was your first "Nationals" didn't you? In the kit you will find your official contestant's armband and identification for a "helper." All the needed directions as to place of events and regulations for competing are in handy booklet form. You should also check the material to make certain you didn't miss out on any of the official souvenirs, amusement park party tickets, and other credentials required for participation in this biggest of

all model aircraft competitions. *The Banquet Ticket?* Did you get yours all right? Good, hang on to it, because you wouldn't want to miss that Saturday evening shindig—not on your life!

Since this is official registration day, Tuesday, July 1, we can trot up to your room and unpack your crates. Let's get all the models out of the traveling boxes and make certain through minute inspection that they were not damaged in transit. Since the room is somewhat crowded with five other fellows here, and each with three or four gas jobs and



She stands guard while Daddy flies.



Doc Adams presents the beautiful Gar Wood trophy to Bill Engelhart. (1940)



Even model builders have to eat so the lunch counter is a very busy place.



Bill Redecke smilingly receives the Ohlsson trophy from Mr. and Mrs. Erwin Ohlsson, prominent model motor designer. (1940)



John Droschkoff, Leon Shulman and Pinky Fruchtman have an additional load on the long trek home.



Modelers register at Hotel Sherman upon arrival.



Milton Hugelot makes microfilm for the indoor contest.

Pictures By HAROLD KULICK

nobody knows how many indoor and outdoor rubber powered ships, as well as scale models and a couple of best-finish entries, we had better stretch some rope across the room from the top of the windows to the doors and hang up your models out of harm's way. This will prevent Charlie from sitting on your wing, and Chuck from throwing his coat over Bill's freshly doped fuselage.

(It was sort of funny how you tied up with this swell bunch of modelers. As we recall, you said that when you checked with the room clerk he told you about the basement rates of \$1 a night for a 12th floor room provided you could dig up five other fellows. All you did was sit around in the lobby until Charlie, Joe and Andy came in from St. Louis, and Bill and Chuck loomed up on the horizon fresh from Washington, D.C. This is quite a system—having hand-picked roommates for the duration of the meet!)

Let's take a drive out to the model field where the outdoor events will be run off. Down there at that end of the field are the tent-city dwellers—the fellows who are camping out. A contest board representative has been here for the past two days to help answer the many questions these modelers always ask, and to aid the growing num-



The Good Brothers with their radio controlled plane at the field ready for flight.

ber of campers-out to get squared away in preparing for the battle.

Say, what's going on down the other end of the field? Looks like Joe Raspante of Brooklyn testing his radio control job. That's genial Bill Effinger of Berkeley Models with him, and the somewhat stoutish chap is none other than the old "Powerhouse" himself, Sal Taibi.

With the fellows is Johnny Rappold, of the Chicago Park District; he's that good-looking chap with the perpetual twinkle in his eye—and the contest director for the 14th National cut-ups.

Johnny says that the officials for this meet have been training for the affair just like prizefighters. Recorders have gone through the procedure of listing official flights until they can carry out the motions and mathematics in their sleep—or so Senior Rappold sez and we believe him, knowing the thoroughness of the Park's supervisors, including F. E. Kardes, di-



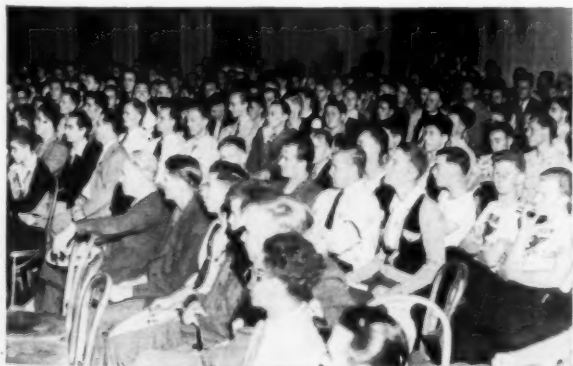
Bill Gibson received the pretentious Modelcraft trophy from Mr. and Mrs. Barney Snyder.



Some of the hundreds of contest kits given out at headquarters.

rector of crafts for the Parks, and Steve Meuris, meet manager for the Nationals.

According to Dan Penny of the contest arrangements committee, as many as 30,000 official flights may be recorded during the four-day contest. The air around Chicago should be tired, holding up all those models. About 1,499 other contestants besides your-



Contestants gathered together for a pep talk and pertinent advice the night before the first day of the contest.



The Detroit group and their leader Steve Corbett with the Megow Trophy for highest club score. (1940)



Airline Hostess presents Bloomingdale trophy to Gordon Cain. (1940)



Joe Bashore won first place in the junior class.



C. C. Johnson won the Stout trophy for the fuselage rubber event. (1940)



Mr. Kapp of the Comet Company presents Comet trophy to Ransel Hill. (1940)

self have been streaming into town for the affair, so this is certainly the largest contest for flying model planes ever held.

Everybody of importance seems to be here. Already we've met flyers from Michigan and Maine, Washington and Wisconsin, California and Connecticut. Some of these fellows came by bus, others by train; a few of the fortunate flew into town, but

the majority seem to have arrived via the family car. We understand that a couple of the lads down at the Sherman hitchhiked from Fort Smith, Ark., and we see some bicycles over at the trailer camp, so maybe someone used that mode of transportation, too. That seems to cover all methods except boating, and we wouldn't be surprised

(Continued on page 62)



George Sass receives the Exchange Club trophy from Mr. N. R. Thurston who congratulates him on behalf of the Chicago Exchange Clubs that donated it. (1940)



Homer Heller won two trophies, the John Russo and Mulvihill. (1940)

SPIRAL STABILITY AND HOW TO ATTAIN IT

By GILBERT MacLEAN

SPIRAL instability has been the greatest problem with which gas model fliers have had to contend. Some planes have been stable under climbing conditions but not when flying horizontally; others have completely lacked this type of stability.

There is hardly a modeler who does not hold his breath when a plane goes into a fast turn after take off; at this moment spiral instability will show itself. This type of stability may be defined as the capacity to resist simultaneously, displacement about all three axes or to recover from such displacement. It involves a complicated system of constantly changing forces and exists only because of definite relationships between an airplane's weights and areas.

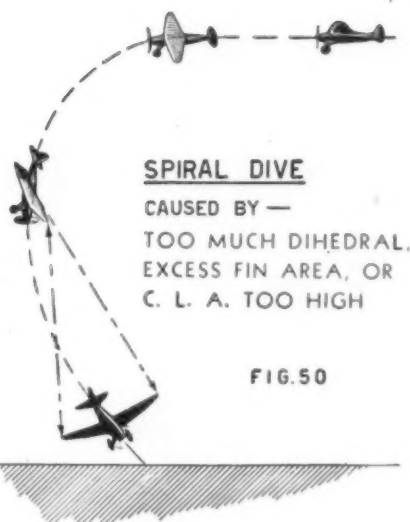
Actually it is quite simple to make a plane spirally stable; once it is known what should be done. However the force combinations involved are exceedingly complicated because they change in their relationship with the angle of bank, velocity and weight of the plane. A force arrangement is dependent upon definite relationship between areas and weights. If these are placed in correct relative positions, stability will result.

In order to determine the correct relative positions and sizes of these factors, let us

first consider the action of a spirally unstable plane in flight:

At the take off it climbs and banks to the left, due to effect of propeller torque or a wind gust; this causes it to turn and the nose to drop gradually. If there is an excess of power and the climb is steep, the nose depression will be insufficient to incline the plane's longitudinal axis below the horizontal. Consequently the plane will spiral but also climb because the nose is pointed upward and propeller thrust is great enough to prevent stalling at this comparatively steep climbing angle. Many contest planes are deliberately made spirally unstable, provided with great power and adjusted to insure a steep, fast spiral climb. However it is essential that such planes remain continuously in climbing position in order to prevent spiral dives and consequent crashes.

If a spirally unstable plane is adjusted to fly horizontally, or at only a slight angle of climb, it will nose downward when it banks and turns. An increase in speed results, followed successively by increased bank, a steeper dive and greater speed in ever increasing cycles until the plane crashes. This maneuver is illustrated in Fig. 50.



SPIRAL DIVE

CAUSED BY —

TOO MUCH DIHEDRAL,
EXCESS FIN AREA, OR
C. L. A. TOO HIGH

FIG. 50

A plane with sufficient spiral stability will bank only slightly in a turn and will hold this bank steadily without dropping the nose. If the turn is momentarily sharp due to wind, the plane will recover immediately and continue its normal flight course.

What causes different reactions in these two cases? This can be determined by analyzing the problem carefully. First, it is necessary to know what forces are reacting; second, how and why they change. The objective is to have them change so corrective moments are generated, balancing or overcoming disturbing moments.

The forces reacting are: lift, weight, centrifugal force and side pressure against the lateral or keel area.

Now suppose a mid-wing plane with low c.g. is flown. It starts off into the wind, turns to the left and banks sharply due to torque and wind. Being a gas model it is comparatively heavy and fast, so the sharp turn produces large centrifugal force pulling outward from the c.g. Fig. A shows the forces and their approximate relative magnitude under these conditions. These forces resist displacement and return the plane to normal flight if it is spirally stable. However what is indicated by the diagram? The weight W acts vertically downward at c.g. and centrifugal force O , acts outward to the left. The lift L acts perpendicular to the wing at X . L_c is the vertical lift component, suspending the plane in flight and P_z is the horizontal component of the force L , P_z and side pressure P , on the fuselage tail, landing gear etc., act to the right, both balancing the centrifugal force O . The lift force L acts at X on the high pinion instead of at the wing center, because of skidding due to turning; air flow striking the wing slightly from the left generates more lift on the high pinion than on the more horizontal low pinion, partially blanketed by the fuselage.

If the plane is spirally stable the arrangement of these forces will produce:

1. Moments tending to hold the plane in a gentle bank while it executes a normal turn or slight climbing spiral, or;
2. Moments that overcome the disturbing forces; returning the ship to normal flight attitude.

(Continued on page 46)

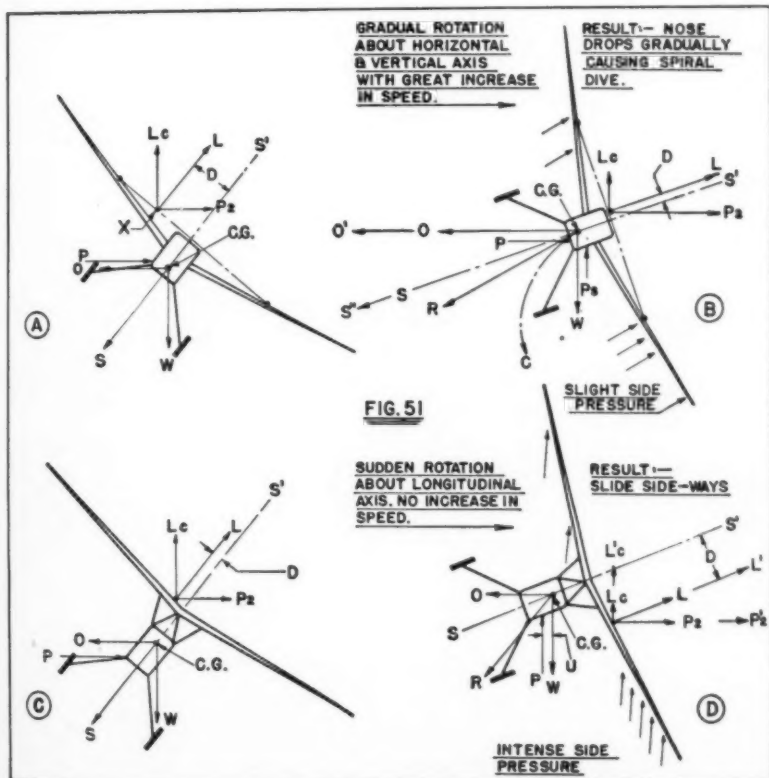
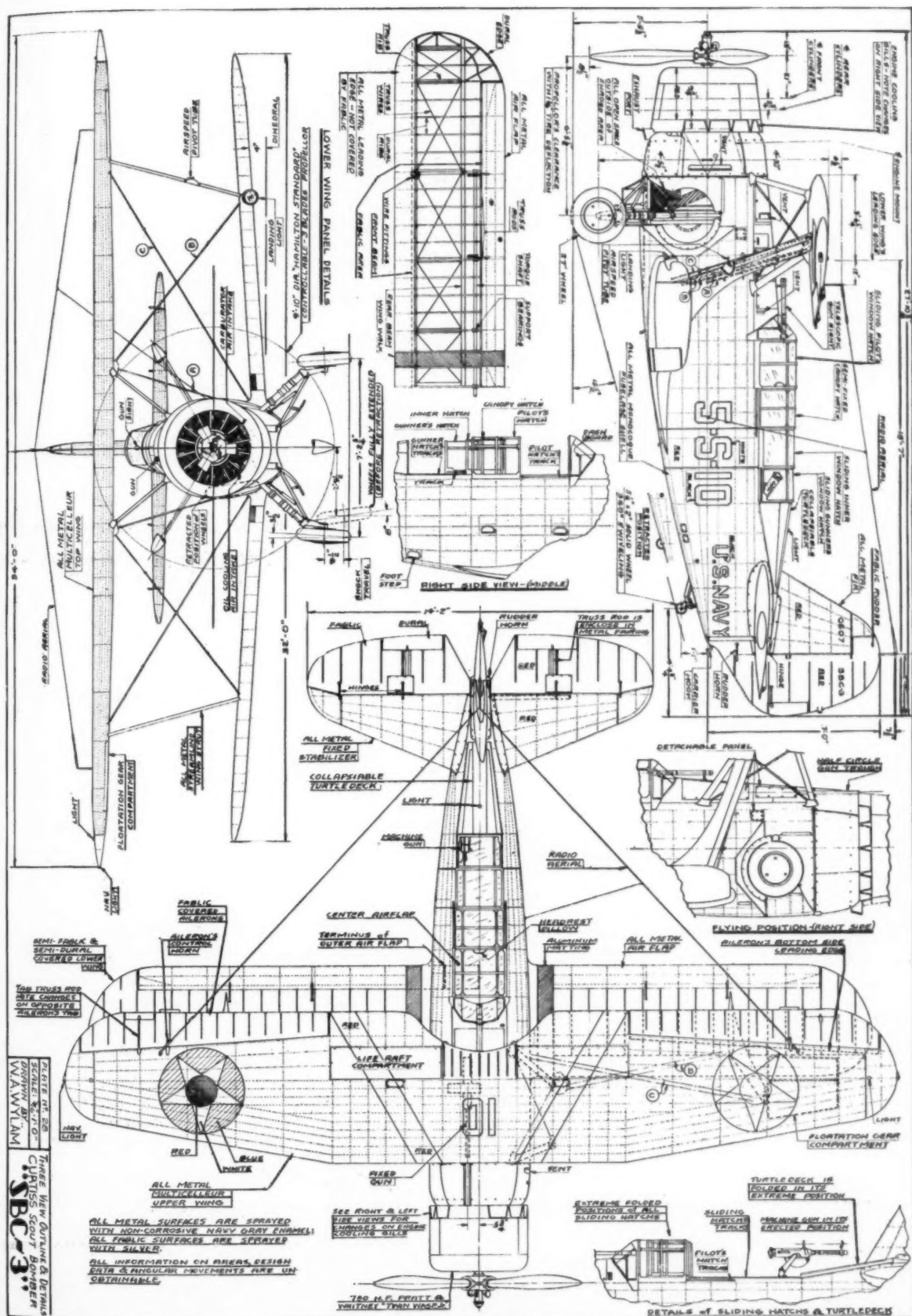


FIG. 51

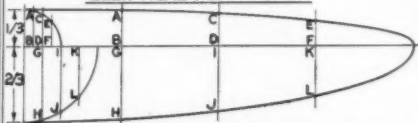


TRICKS



THIS TORSION SPRING FOR RUBBER TENSIONERS IS FAR SUPERIOR TO THE COMPRESSION COIL TYPE MORE OFTEN USED. MAKE THIS FROM LIGHT PIANO WIRE (NO. 10 OR LESS). FORMING THIS SPRING IS SIMPLE IF ROUND-NOSED PLIERS ARE USED.

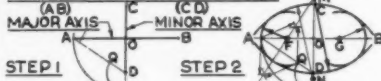
SEE COLUMN THREE FOR MORE DETAILS OF THE ELLIPSE CONSTRUCTIONS SHOWN BELOW. -HOW TO LAYOUT A WING WITH AN ELLIPTICAL PLAN FORM-



THIS WING WAS DESIGNED TO HAVE THE SPAR AND THE CENTERS OF PRESSURE ON A STRAIGHT LINE. SWING ONE ARC WITH RADIUS = 1/3 OF CHORD. SWING SECOND ARC WITH RADIUS = 2/3 OF CHORD. DIVIDE RADII INTO 4, 8, OR 16 PARTS, AND SEMI-SPAN INTO CORRESPONDING NO. OF PARTS. WITH DIVIDERS TAKE DISTANCE 'AB' AND LAY OFF ON WING PLAN FORM AS LABELED MARK OFF OTHER POINTS AS SHOWN; COMPLETE WITH FRENCH CURVES FOR THE TIPS AND MILD SHIP CURVES OR A SLIGHTLY BENT STICK FOR THE RES.



ONE CIRCLE WITH RADIUS EQUAL TO 1/2 MAJOR AXIS. SECOND CIRCLE WITH RADIUS = 1/2 MINOR AXIS USE 30-60 TRIANGLES TO GET DIVISIONS. IF GREATER ACCURACY IS DESIRED BISECT THE ANGLES SHOWN. WHERE THESE OBLIQUE LINES CROSS THE LARGER CIRCLE DRAW PERPENDICULARS WHERE THEY CROSS INNER CIRCLE DRAW HORIZONTALS. INTERSECTION OF THESE LAST LINES LOCATE POINTS ON THE ELLIPSE.



FOR APPROXIMATE ELLIPSES SWING 'AC' SCRIBE ARC 'DE' TO INTERSECT LINE 'AD'. BISECT 'AQ' WHERE THIS BISECTOR CROSSES THE HORIZONTALS AND PERPENDICULARS LOCATES THE CENTERS OF THE ARCS WHICH FORM THE ELLIPSES. USE DIVIDERS TO TRANSFER OF 'TO' TO 'OG' AND 'MO' TO 'ON'. NOTE: LOOK FOR MORE METHODS NEXT MONTH.

SINCE WORKING IN FRACTIONS IS VERY SLOW THESE SHOULD BE CONVERTED INTO DECIMALS. IN THE PROBLEM 7-15/16 x 4-3/8, CHANGE TO DECIMAL EQUIVALENTS (7.937 x 4.375) SIMPLIFY AS EXPLAINED IN LOWER RIGHT HAND CORNER OF PAGE, (7.94 x 4.38); MULTIPLY TO GET 34.772. SIMPLIFY (34.8). THE ANSWER SHOULD BE LEFT IN DECIMAL FORM AND MEASURED OFF USING A 6" MACHINIST METAL SCALE (READS IN DECIMAL



OF THE
WHEN COMPUTING AREAS, ETC. FOR NATIONAL CONTESTS USE THE DECIMAL EQUIVALENT CHART ON THIS PAGE.

TABLE OF PIANO WIRE SIZES & NOS.

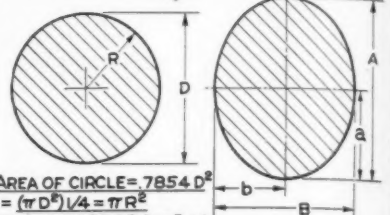
NO. OF GAGE	WIRE GAGE (DIA)	NO. OF GAGE	WIRE GAGE (DIA)
7/0	.003"	18	.041"
6/0	.004"	19	.043"
5/0	.005"	20	.045"
4/0	.006"	21	.047 3/8" APPROX.
3/0	.007"	22	.049"
2/0	.008"	23	.051"
0	.009"	24	.055"
1	.010"	25	.059"
2	.011"	26	.063 1/16" APPROX.
3	.012"	27	.067"
4	.013"	28	.071"
5	.014"	29	.075"
6	.016 1/8" APPROX.	30	.080 1/8" APPROX.
7	.018"	31	.085"
8	.020"	32	.090"
9	.022"	33	.095 3/8" APPROX.
10	.024"	34	.100"
11	.026"	35	.106 1/8" APPROX.
12	.029"	36	.112"
13	.031 1/8" APPROX.	37	.118"
14	.033"	38	.124 1/8" APPROX.
15	.035"	39	.130"
16	.037"	40	.138"
17	.039"		

PLEASE NOTE THAT COMMON FRACTIONAL EQUIVALENTS ARE GIVEN. VIZ. 063 = 1/16, ETC. THIS ADDITION ENABLES THE BUILDER TO VISUALIZE CLEARLY ALL INTERMEDIATE SIZES.

DECIMAL EQUIVALENT TABLE	
1/16 = .0625	1/2 = .5000
1/8 = .1250	5/8 = .6250
3/16 = .1875	7/8 = .8750
1/4 = .2500	1 = 1.0000
5/16 = .3125	
3/8 = .3750	
7/16 = .4375	
1/2 = .5000	
9/16 = .5625	
5/8 = .6250	
11/16 = .6875	
3/4 = .7500	
13/16 = .8125	
7/8 = .8750	
15/16 = .9375	
1 = 1.0000	

PARTS OF AN INCH) ALL AERONAUTICAL ENGINEERS USE THIS SCALE BECAUSE ITS EASIER AND MORE ACCURATE. CONVERT ANSWER IF DESIRED.

TRADE



AREA OF CIRCLE = $7854 D^2$
 $= (\pi D^2)/4 = \pi R^2$
 $\pi = 3.1415926536 \approx 3.14$
 USE 3.14 FOR ORDINARY COMPUTATIONS.

THE ELLIPSE IS THE MOST IMPORTANT GEOMETRIC FIGURE USED IN STREAMLINED MODEL DESIGN.

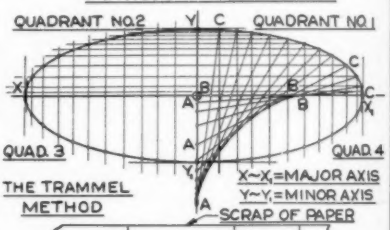
ITS APPLICATION INCLUDES FUSELAGE CROSS-SECTIONS, WING PLAN FORMS, WING TIPS, EMPENNAGE CONTOURS, ETC. SHOWN HERE ARE MOST OF THE METHODS OF CONSTRUCTION AND RELATED FORMULAE. IT IS IMPORTANT THAT EVERY MODEL DESIGNER BE FAMILIAR WITH THESE.

AREA OF ELLIPSE = $1/4 (\pi AB) = \pi ab = 7854 AB$

AVERAGE CHORD = $\frac{\text{SPAN}^2}{\text{AREA}}$

CIRCUMFERENCE = $2\pi \sqrt{\frac{a^2 + b^2}{2}}$ (APPROX.)

METHODS OF CONSTRUCTION



THE TRAMMEL METHOD

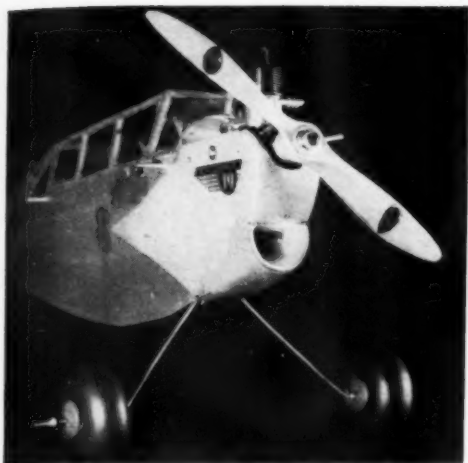
AC = 1/2 THE MAJOR AXIS. BC = 1/2 THE MINOR AXIS. X, IS CALLED X PRIME OR X SUB 1. PLACE PIECE OF PAPER SO THAT POINT C LOCATES ANY POINT ON THE ELLIPSE WHEN POINTS A & B ARE MOVED SIMULTANEOUSLY ALONG THEIR RESPECTIVE AXES, OY & OX. THIS PROCEDURE MAY BE REPEATED IN EACH OF THE OTHER THREE QUARTERS (QUADRANTS). AN EASIER WAY IS TO PROJECT THE FIRST POINTS VERTICALLY AND HORIZONTALLY. TAKE DISTANCE FROM POINTS TO AXES WITH DIVIDERS AND LAY OFF IN THE OTHER QUADRANTS. PROCEED AS FOLLOWS: TAKE DISTANCE FROM ALL THE 'C' POINTS TO THE AXIS Y-Y, (ONE AT A TIME), AND USE TO FIND POINTS ON ELLIPSE IN QUADRANT NO. 2. TAKE DISTANCE FROM 'C' POINTS TO AXIS X-X, AND LAY OFF ON VERTICALS IN QUADRANTS 3 & 4.

EVERY MODEL BUILDER SHOULD KNOW HOW TO REDUCE COMPLICATED NUMBERS TO SIMPLE ONES FOR ORDINARY USE. IF THE LAST NUMBER TO THE RIGHT IS 5 OR LARGER RAISE THE NUMBER TO THE LEFT OF IT BY ONE AND KNOCK OFF THE LAST DIGIT.

EXAMPLE:

$\pi = 3.1415926536$
 ≈ 3.14
 BE USED FOR ORDINARY COMPUTATIONS.





The supercharger scoop may be clearly seen located in the propeller slip stream

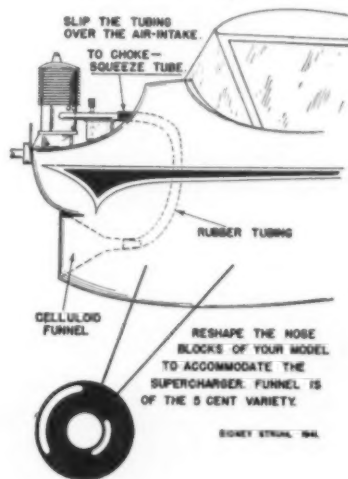
NOW that the gas model regulations adopted by the Contest Board of the Academy of Model Aeronautics state a gas model must weigh not less than 80 ounces for every cubic inch of engine displacement and it shall not weigh less than 8 ounces for each square foot of wing area are in effect, a contestant finds contest competition growing keener every day. Present-day design of gas models is becoming more and more standardized as characterized by all the high-wing pylons, polyhedral and large stabilizers that are found at all gas model contests. This standardization of design was created by years of experiences by the "game's" top-notch model builders; motor manufacturers also standardized their productions so that each motor that comes off their assembly lines develops just as much power as the one that precedes and the one

that follows. With all of this "cursed" standardization going on you begin to wonder just how you can get enough edge on the other fellows so that you can win that forthcoming contest. You've just finished your "Super-Dipper" gas model and have mounted your new "Pul-Er" gas engine in its nose. This is all very fine but you know for a fact that at least three members of your club have exactly the same combination, so you know the competition is going to be mighty tough.

Well, sir, we believe we can give you a little tip on a gadget that will practically guarantee your ship to "fly rings around" all others on the field—and that includes model combinations that are just like yours. The answer? A supercharger for your motor!

As you probably know, all the latest top-flight military fighters have power driven superchargers attached to their powerplants. Of course we model builders could not use such a complicated system as the "big boys," so we had to devise something

that would force air into the motor like a full size supercharger and yet it had to be light, simple and 100% foolproof. You can see that our little supercharger meets all (Continued on page 38)



SIDNEY STRUHL '44

Academy of Model Aeronautics

A Division of the National Aeronautic Association

OFFICIAL MODEL AIRPLANE NEWS

THE OFFICIAL GOVERNING BODY FOR
MODEL AERONAUTICS IN AMERICA—JOIN NOW!



1940 Model Honors to 15-Year Old
A.M.A. Flyer

BEST gasoline engine powered model aircraft flyer in America in 1940" is the title that has been awarded to Bobby Davis, of Atlanta, Ga., by the Academy of Model Aeronautics' Contest Board. By virtue of his flying a powered miniature aircraft for a new high official three-flight-average-duration of 21 minutes, 33.8 seconds, Davis captured the I.G.M.A.A. trophy, awarded annually by the Academy of Model Aeronautics to the licensed flyer who establishes the highest record of the year in an A.M.A. sanctioned competition or record trials.

Bobby Davis was also the youngest flyer to win the award, since at the time of his flight on September 2, 1940, he was only

15 years of age.

In winning the trophy, Bobby Davis used a model airplane designed and distributed in kit form by Comet Model Airplane Company.

Employing a mechanical timer to limit the motor run to 20 seconds in accordance with A.M.A. safety regulations, Bobby Davis' craft was required to take off from the ground under its own power without assistance on each of the three flights. H. Reynolds Hudson of Atlanta, A.M.A. contest director, was the directing official at the time the record was established.

The I.G.M.A.A. trophy award to Davis marks its first presentation under Academy jurisdiction. It was presented by Charles H. Grant, editor of MODEL AIRPLANE NEWS, to the A.M.A. for permanent custody and

annual award in the fall of 1940.

Mr. Charles H. Grant formed the International Gas Model Airplane Association years ago so that guidance could be given to this newly created phase of aeromodeling. Later the I.G.M.A.A. organization and its activities were turned over to the Junior N.A.A. The present junior aviation activities of N.A.A. conducted by its divisional associate, the Academy of Model Aeronautics, is the outgrowth of the original I.G.M.A.A.

Lord Wakefield

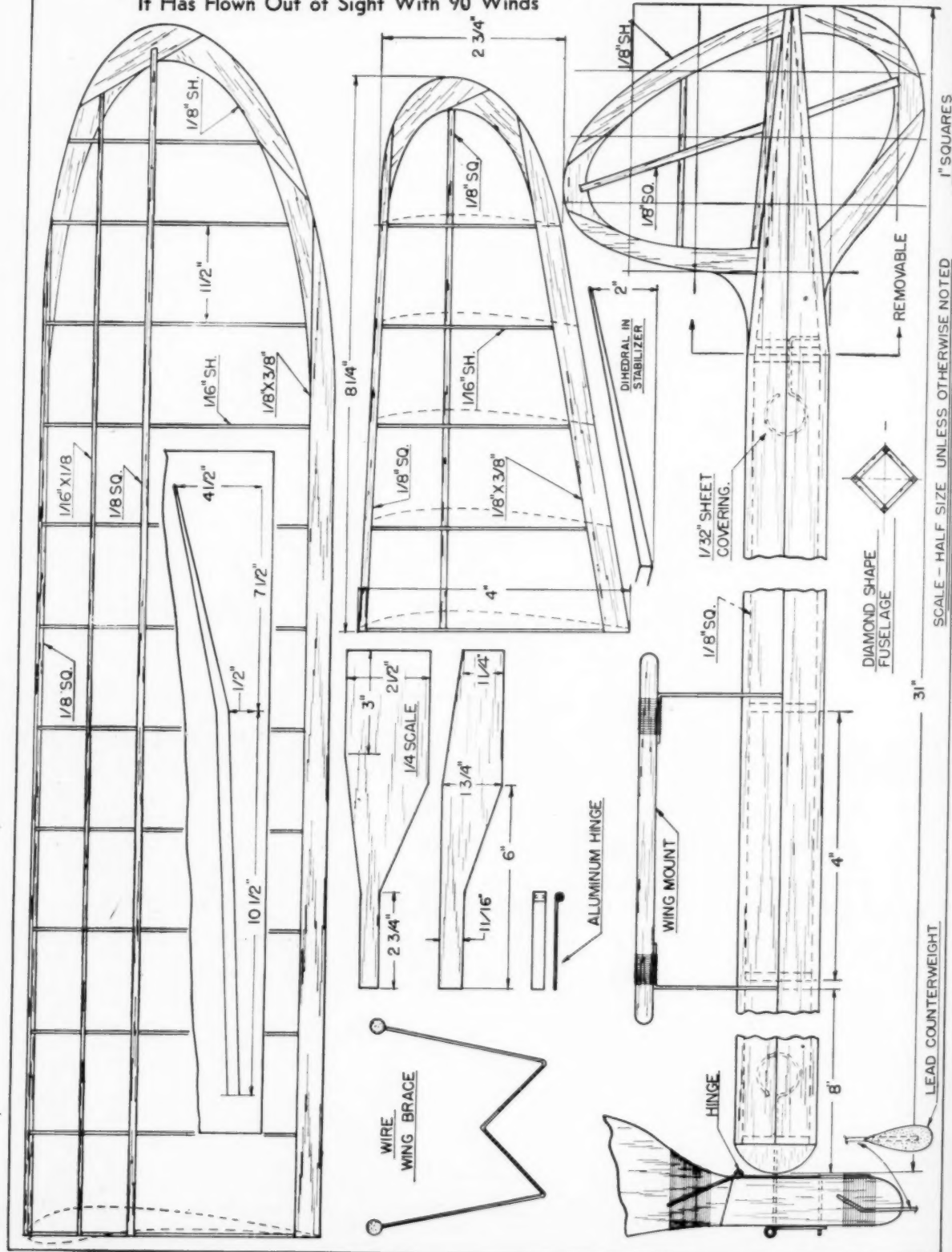
News from England of the death of Viscount Wakefield of Hythe was received recently by the Academy of Model Aeronautics.

(Continued on page 38)

The "ROCKET" Stick Contest Model

BY
CARL
VERDI

It Has Flown Out of Sight With 90 Winds





The new 2000 hp. Republic pursuit plane, P-47, now being tested by the Army. (Acme)



New Ryan PT-21 Air Corps primary trainer

IT WAS not so very many years ago that Boeing built a fleet of sixty low-wing, high-speed transports for United Airlines; that was history in the making. They were soon to be followed by several super-fast designs such as Curtiss' last Condor and the Douglas DC-1. This was the real moulding of what is now a great industry; it was the nucleus from which aviation has mushroomed into what we know is the main protectorate of our country. With these new ships the airlines were able to do business on a sound basis and created a market for airplane manufacturers. This put the manufacturer on a concrete footing also, and thus his well established organization was able to build up an aviation empire second to none.

We all know the story from there. However, the whole story has not been told as there are a few more chapters on future developments that are as outstanding as those of the present. Many years ago it was foretold in these pages that airplanes would be the dominating factor in transportation. The day is now not far away when all first class mail, going a reasonable distance, will be carried by air; railroad passenger travel has received a terrific "Blitz" from the airlines; the automobile industry has already joined up with aviation, lock, stock and barrel, and many of our merchant marine vessels are overnight being converted into aircraft carriers.

Pan-American Airways, for example, has Lockheed planning construction of forty huge airliners to maintain traffic on the

trans-Atlantic air lanes. Yes, it has been only a few years since the Boeings, a well planned enterprise that established one of the world's greatest industries.

We have also seen aviation grow in England and Germany, and through the medium of good organization from the start we may see the evolution of two new air powers somewhat similar to the American setup, but perhaps

not quite so expansive. These are the Central and South American combine and the Canadian aircraft industry. The wealthier Latin-American countries have been paying a good price for U. S. Army pilots to train their personnel in the past, but now the United States is sending men to give free tutelage to build up a strong fighting force to, we might say, discourage little Adolf. Though Curtiss planes are now being built in Argentina and North American trainers are to be built in Brazil in the near future, aviation there has not reached the "industry" stage; but it may be considered a strong potential weapon, together with Mexico, who is now being taken in tow also. U. S. equipment by the carloads may be sent down to the Latin Americas.

Canadian aviation is a different situation in that its production capabilities are very encouraging and appears to be developing into a major adjunction for supplying Great Britain with a considerable amount of airplanes. Canadian aviation has had its ups and downs like any other industry and

is going through the same routine struggle as we did, only a few years behind schedule. Not so long ago a Canadian aircraft company had a production rate of about five planes a year, which was certainly not overworking the personnel. But we recall the

(Continued on page 42)



A new type of German reconnaissance plane said to be a Focke Wulf. (Acme)



The Lockheed P-38, 400 m.p.h. interceptor. It is now coming off the production line in a steady stream. (Acme)



A Northrop A-17 in its new colors and insignia; olive drab on top, light blue bottom with star in circle instead of tail stripes



Navy also has new coloring: A SBC-4, all gray with star in circle on fuselage. Squadron and section insignia are eliminated

THE FLOUNDER

Class "A" Gas Model

Design By "Pinky" Fruchtmann

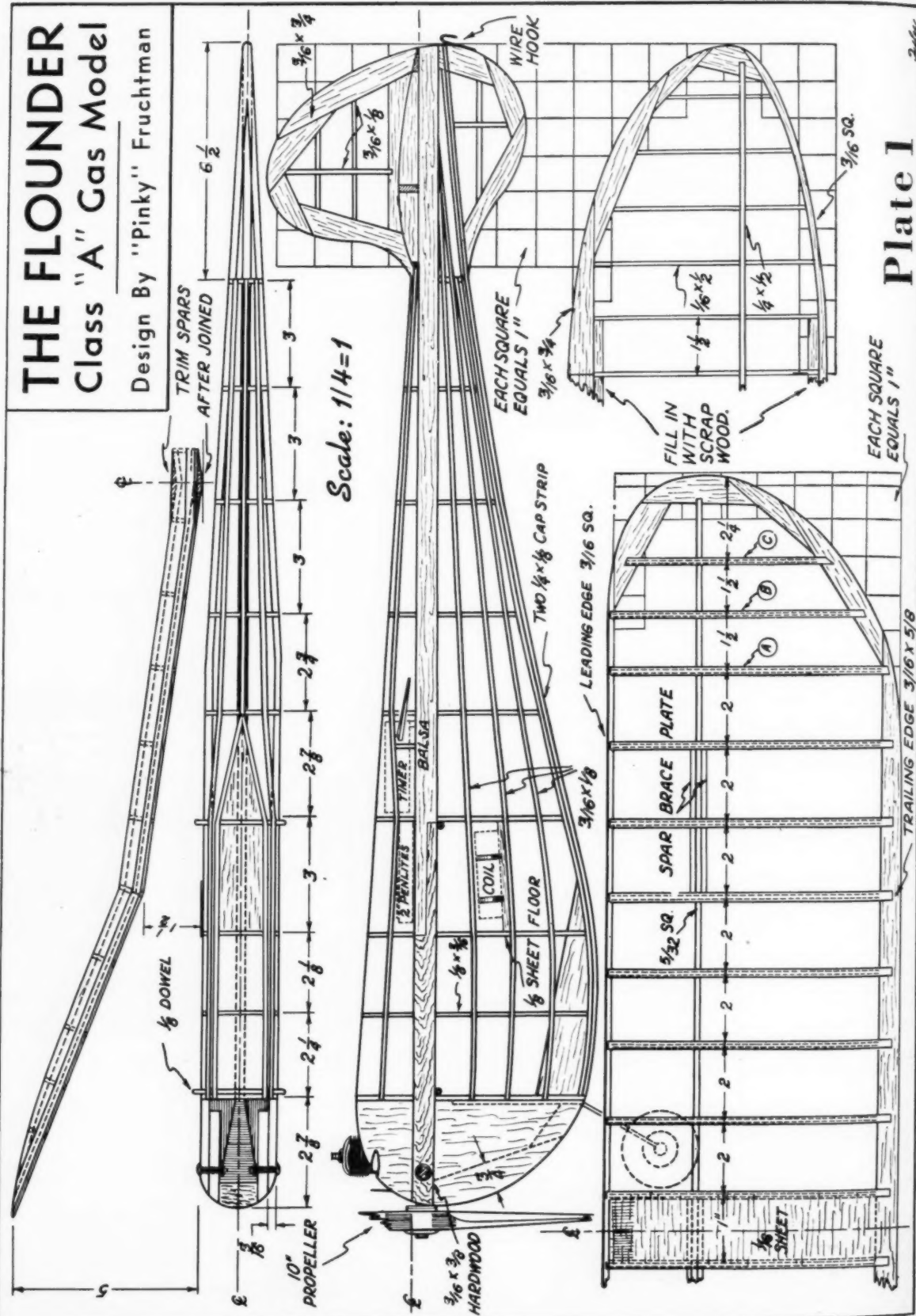


Plate I

The FLOUNDER TAKES WING

How to Build the High Performance
1940 National Senior Second Place
Class A Winner

By "PINKY" FRUCHTMAN

THE Flounder, one of the "hottest" little Class A ships ever to roar off a runway and point toward the blue, is a grand example of a ship designed from time-proved points which has made good in the contest field. From the first day the ship was test-hopped, until the present time, the ship has taken in more than its share of prizes, and it still is a factor to contend with in any meet. In ordinary sport flying it is a pleasure to use, and we heartily recommend it to any builder.

Just before the 1940 Eastern Seaplane Contest the ship was completed and test-hopped. Floats had been made and we were ready (and confident) of a high place for the ship. Alas . . . the Sunday before the meet we couldn't resist the temptation to try the model again, and promptly lost it when it did over ten minutes on a scant 15-second motor run.

The first contest in which the Flounder was entered it took ninth against a strong Class A field. Scores of test flights followed and by the time the 1940 Nationals rolled around, we were confident we knew the secret of its flight. Besides that, the motor was finally broken in, making us all the more sure.

Well, we were right: In its first flight in Class A event (Senior Division) the ship did a minute and one-half. On the second flight the Flounder caught that elusive thermal and disappeared from sight after nearly seventeen minutes. The third, taken after the sun had retired (and the thermals were all used up) was about a minute. These flights won second place in the Senior Division.

After returning from Chicago the ship took first in the American Legion meet at Hadley Field, N.J., seventh at the Mid-Hudson Valley Meet at Poughkeepsie, N.Y., and first at the Prop-Spinners Contest held at Creedmoor, N.Y.

Yes, builders, the Flounder is a proved ship! She takes off the runway with a burst

of power, circles sharply to the left and bores her way to spectacular altitude before those twenty seconds are used. Her glide is quite slow, and as the little ship makes those lazy circles to the right, the minutes and seconds really pile up. At the same time the ship is inexpensive and simple to build. Here are the specifications of the original ship, just to check your building:

Area, 285 square inches;
span, 40 inches; chord, 8 inches; A/r, 5; length, 30 1/2 inches; weight, 18 oz.

According to several builders who have made the plane from the original plans, it should cost about \$1.25 exclusive of wheels, motor and ignition.

Fuselage

The fuselage is reasonably streamlined, but as simple to build as a box. As may be seen in the drawing, the fuselage is built inverted. The gumwood motor bearers are notched, as shown, and cemented to the 3/16" x 3/8" balsa main longeron. When these joints have dried and are secure, lay them on your top view of the plans. Of course plans must be enlarged from original plates, correct scale for doing this being given in each case.

When the main longerons have been pinned to the plans, insert the cross members of the fuselage, following measurements carefully. Let the longerons take a natural taper to the tail never forcing the wood to bend, but forming a graceful curve. All joints should be cemented securely and allowed to dry. Wood sizes are specified in the plans.

The V-members, which extend to the keel, are of 3/16" x 1/8" medium balsa and are next formed, cemented to the main longeron and to each other. Notice that they do not come to a point, they must butt squarely to the lower longeron. For best results the V-members should be formed before being secured to the main longeron. The V's are shown on a separate plate and by following measurements carefully no difficulty should be encountered. DO NOT add the keel at this point.



It has been a consistent winner in many contests



"Coming in" on a slow flat glide

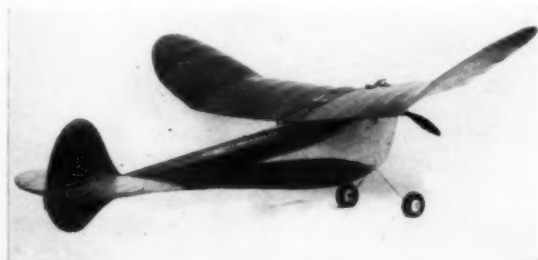


The author and his winner

The next step in fuselage construction is building UP the wing support and deck. Turn your construction right-side-up and get out that 3/16" x 1/8" medium balsa. From that you will build the cabin, (what little the Flounder has) using 1/8" sheet balsa formers, to make up the cross section. The formers are shown, numbered 1 to 9, on the plans. Place the strips of 3/16" x 1/8" in the slots in the formers.

Former 1, you will note, is the firewall, which is of 1/8" sheet balsa. The lower half is of plywood, partially to hold the landing gear and to give strength to the cowl mounting. The first step in installing the firewall is to bore holes for the landing gear. The landing gear is then formed of 3/32" piano wire and bound to the firewall as indicated. Several coats of cement

(Continued on page 50)



Simple, light and well streamlined

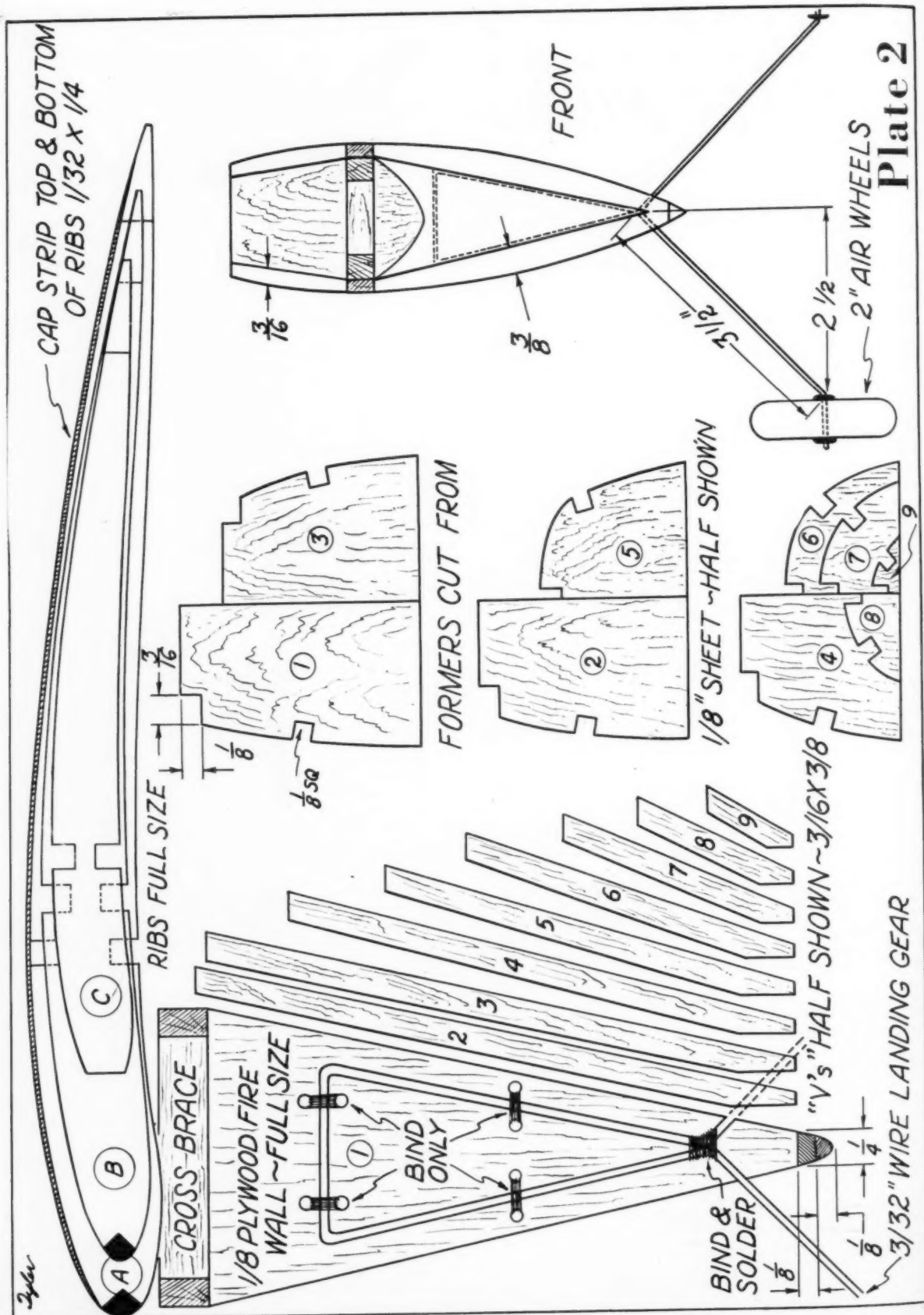
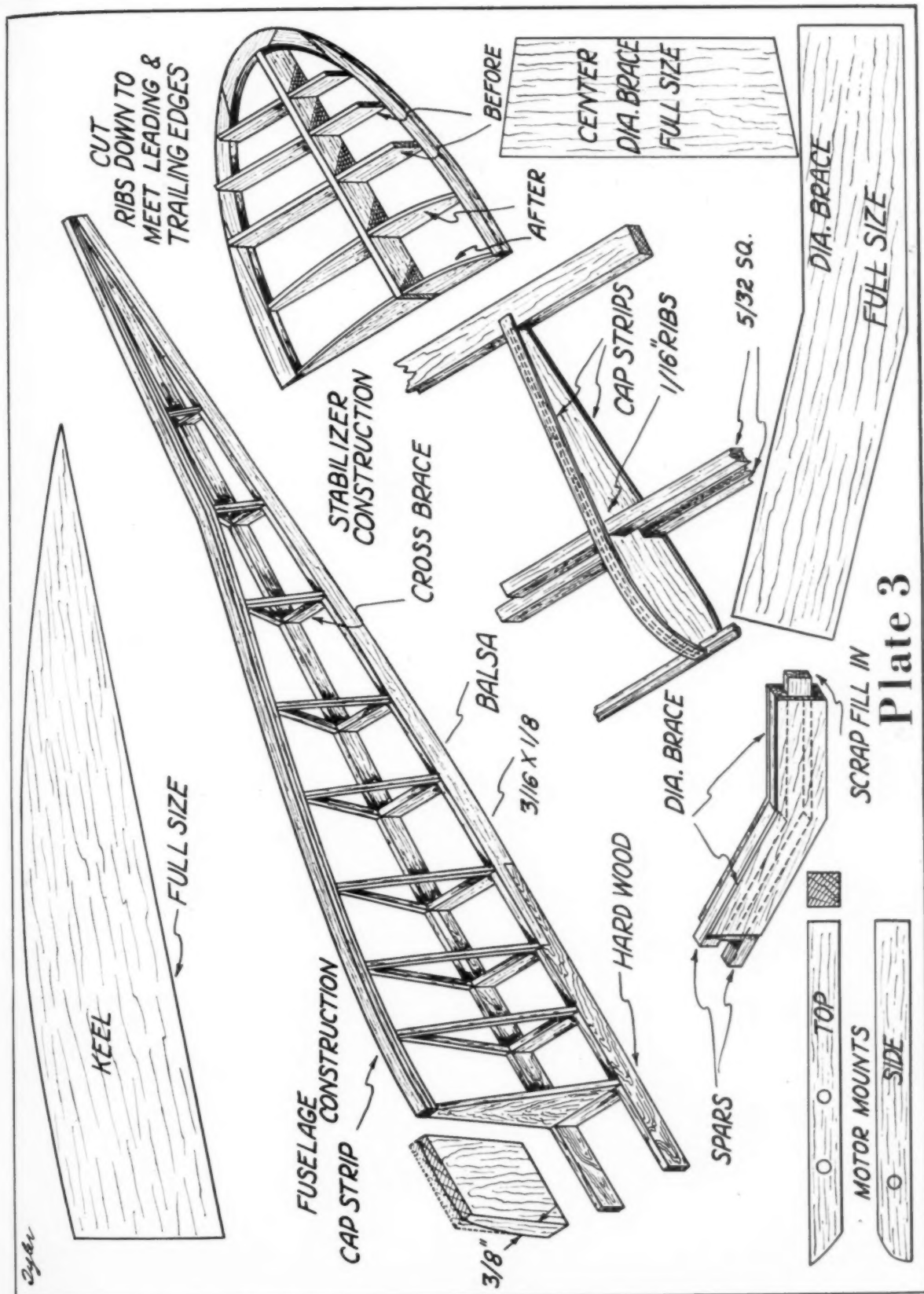


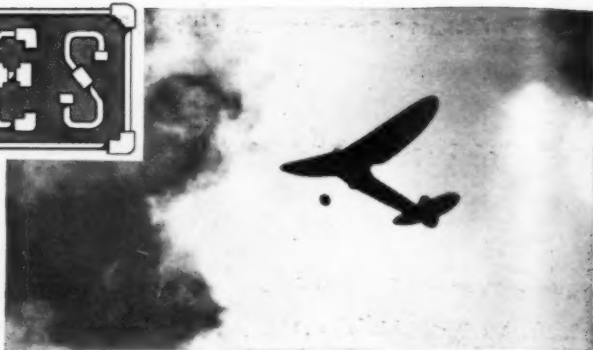
Plate 2



GAS LINES

AIR WAYS

NEWS OF MODELS AND BUILDERS FROM ALL PARTS OF THE WORLD



Pict. 1. John Hagerman's gas model soars skyward



Pict. 2. Elmer Powell's Class A job with a tail moment arm of 2

FROM time to time changes in practice and new developments necessitate modifications or changes in rules governing contests and design. Apparently, now, we have reached a stage of development where a change is demanded.

The rule for fuselage crosssection which must be equal to or greater than $L^2/100$ was established for reasons based on rubber power design. Rubber power makes it unnecessary to build planes with fuselages of fairly large crosssections; a single stick may serve to carry the motor. Thus without such a rule model builders would be building only

stick models for contest work. To encourage them to design semi-scale models, or models resembling large ships, the crosssection rule was established.

However this is unnecessary in gas models because gas model powerplants are similar to those in large aircraft and the trend in this case is to build fuselage instead of stick models. The design of a gas model, built without a fuselage, is of such nature that it could be applied to a big ship as well, and would be a contribution to large plane practice. The normal gas model will have a fuselage, however, for a structure of this type serves to streamline the motor and makes a more efficient flying plane than an orthodox gas powered stick model could ever hope to be.

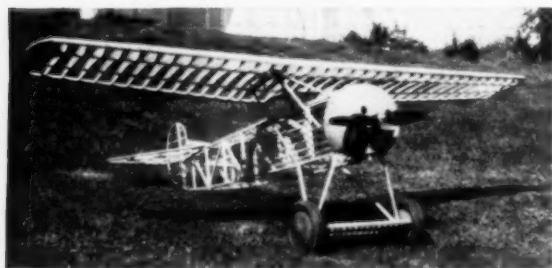
Consequently the fuselage crosssection rule requirements appear to be superfluous in gas model contests.

We advocate therefore this rule be discontinued in this category. This will simplify the work of contest directors and officials;

a decided step in the right direction, for contests now are becoming so large and their operation so involved that a reduction of procedure to the simplest terms is essential. Those who serve as officials know well the labor entailed in determining fuselage crosssection and whether or not a particular model is eligible under this rule. To eliminate it should bring many benefits to officials, and model builders as well, for a larger number of contestants



Pict. 3. David Bailey's Original Design Contest winner



Pict. 4. Fred Salmon says this Fokker D8 flies well



Pict. 5. Mr. Bergdorf (left) thanks Col. W. H. Reid for his "model" cooperation



Pict. 6. Ken Willard with his baby ground control plane. It incorporates a simplified control system



Pict. 7. Mr. Rodrick at Oakland Hobby Show with his flying steam powered model, built in 1909, and still in one piece



Pict. 14. The California State Championships in full swing



Pict. 13. Three generations of the Potter family fly models

could be served at headquarters and made ready for flight in a much shorter time. This will speed up contests to the greater satisfaction of everyone concerned.

Another change in the rules can also be made to simplify contest procedure; namely, in the wing loading rule. At present it is required that a model weigh eight or more ounces per square foot of wing area. This makes it necessary to measure the span, determine the average chord, (a particularly arduous task in elliptical or irregularly shaped wings) and then multiply the span by the chord to get the area. The weight is then divided by the area to determine the wing loading. To follow this process with several hundred contestants requires a great deal of time that might otherwise be used for flying.

The same result can be obtained by a much simpler arrangement: A rule requiring that the weight must be greater than $S^2/12$, in which S is the span of the wing. Such a rule would require the measurement of span only. Then the maximum required value for $S^2/12$ could be determined for any weight by reference to a previously prepared chart or table. The model's qualifications could be immediately determined, without calculations.

Some model builders may not realize the significance of this rule—it is based upon the span loading of the model—which is an accurate measure of any ship's climbing capacity. Usually the climb is proportional to this value and of course the duration is proportional to the climb, provided aerodynamic efficiency is the same in all cases. Some builders may say this would encourage low aspect ratio; possibly it would,



Pict. 12. Cowboy Weinrich is a gas model fan

among ignorant or unthinking model builders. For, by building a low aspect ratio ship, aerodynamic efficiency would be lowered to such an extent that it would not compensate for the lowered wing loading made possible. In other words, a high aspect ratio plane with a higher wing loading, in such a case, would fly as well or more efficiently than one with the same span, with greater chord and the same weight. There would not be much difference in either case however; it would make all models, regardless of aspect ratio, approximately on a par with respect to basic flight capacity.

We strongly urge that the Academy of Model Aeronautics seriously consider these two rule changes and make modifications accordingly, if they meet with favor.

Jack Moralez of 1440 P Street No. 5, Lincoln, Nebr., sends us picture No. 1, showing John Hagerman's "Ensign," Ohlsson "23" powered, climbing for altitude. This ship placed third in its first contest.

(Continued on page 52)



Pict. 11. Hurd's home made motor



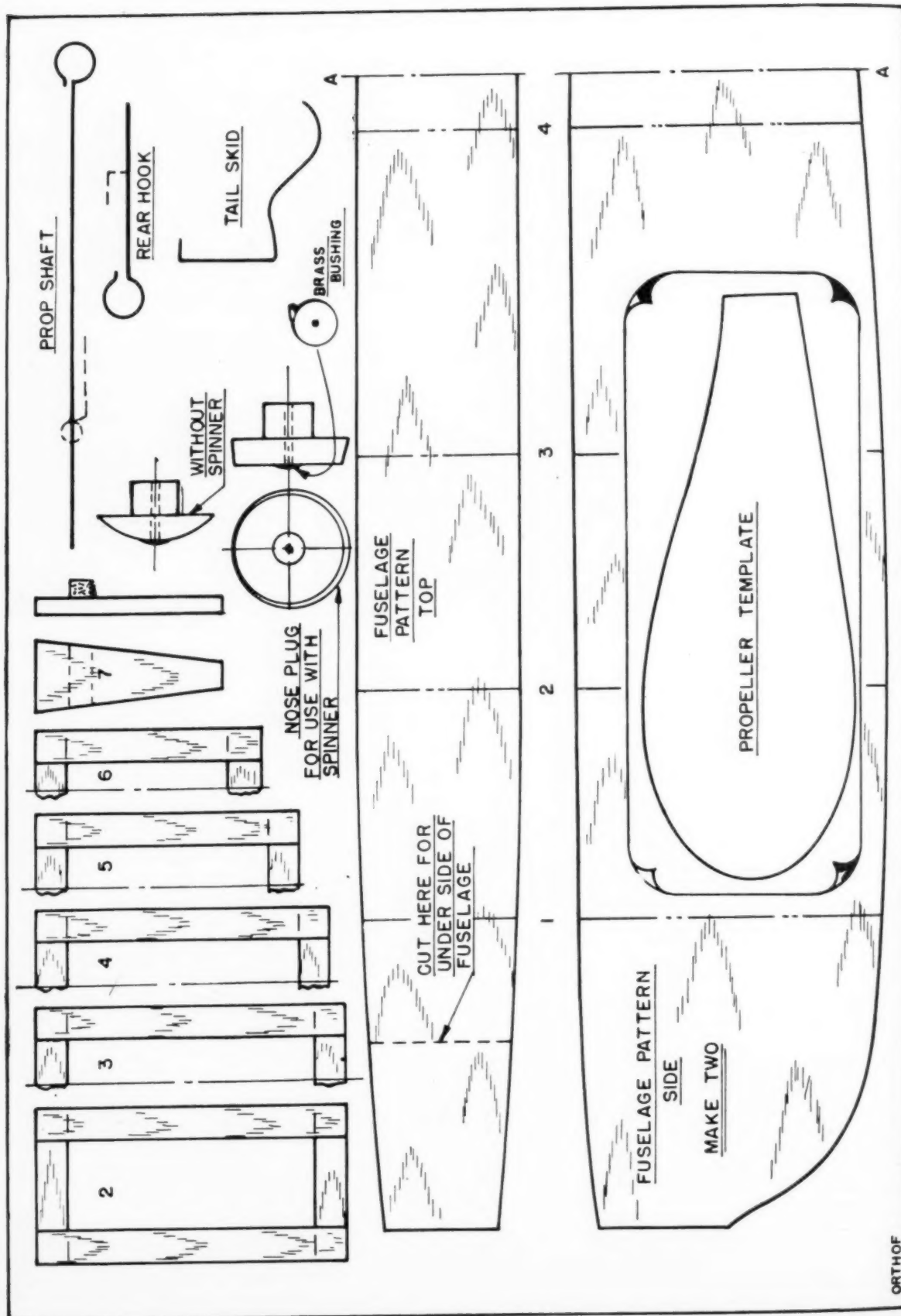
Pict. 10. The plane was rescued safely.

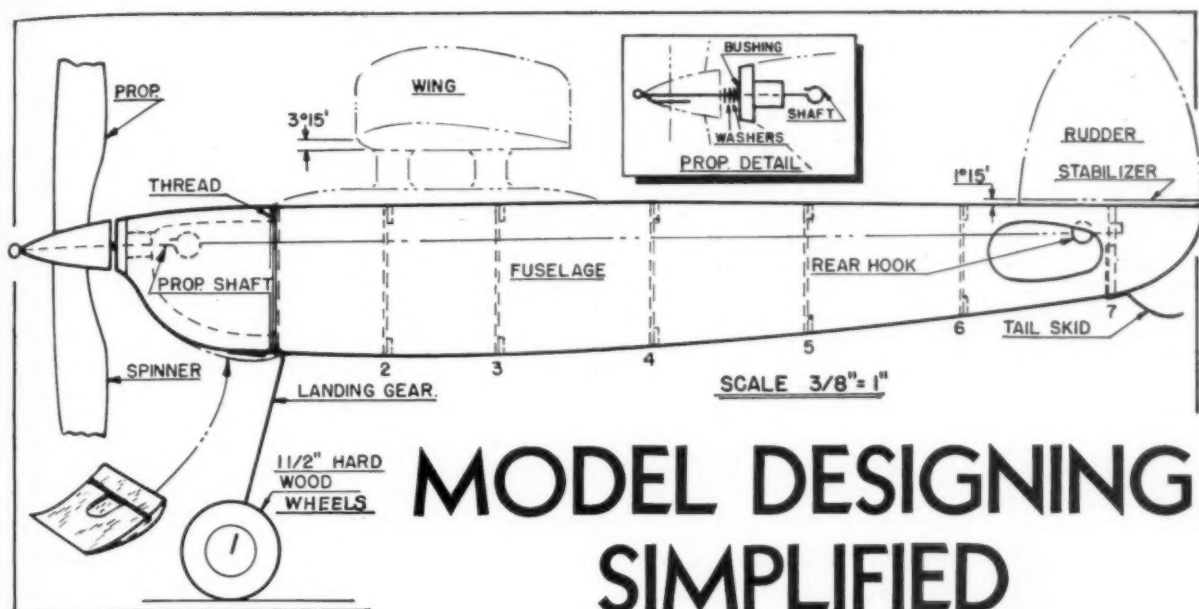


Pict. 8. Tony Riccardi's detailed solid scale SE-5. Note the machine gun



Pict. 9. Cyril's flying scale Amiot 144 bomber





MODEL DESIGNING SIMPLIFIED

Designing the Parts Details and Laying Out the Patterns
for Building Your First Fuselage Model

By CHARLES HAMPSON GRANT

ARTICLE NO. 9

SO FAR in this series on designing and building your first fuselage model, general proportions, contours and location of structural parts have been established and a basic three-view assembly drawing made. (See article 8, July issue.)

The next step is to work out the detail design of each part indicated in the drawings so they will fit properly into the structure; because material, size and parts position and the way they fit together influence details of their design.

Start with the side view, drawing in details of the various parts as they are worked out. First, the body, sides, top and bottom are to be of balsa sheet. In order to keep the structure light but strong they should not be too thick or heavy. Due to the box type construction great strength will result with relatively thin sheet. So, 3/64" light balsa will serve nicely. One flat sheet will be used for each side, extending from the nose plug to the fin rear edge on the sides and top. The bottom sheet need not be bent around the nose block curve so should start from a point 1" forward of the nose block rear edge and extend rearward to a point about 1/2" back of the last bulkhead, shown in the assembly side view.

Next design and draw in bulkhead details. These are to be rectangular, made of balsa and located as shown in fig. 7. (July). A very rigid, strong and simple construction results from making each one of four straight strips (see parts drawing). These strips should be of medium hard balsa, 1/4" wide and 1/16" thick, cemented together at their ends, vertical strips over top and bottom strips, to form a rectangle. Bulkheads 2, 3, 4, 5 and 6 are similarly made to required dimensions. Bulkhead consists of two vertical 1/4" x 1/16" strips cemented to the nose blocks rear ends, flush with the sides. Bulkhead 7 must serve as an anchor for the rear end of the motor and therefore should be solid and thick enough to present considerable gluing area to the body sides, top and bottom. Make it from solid balsa 1/8" thick, grain running vertically. Across its back face in horizontal position a hard

balsa strip 1/8" x 3/16" in cross-section should be cemented, extending from one body side to the other. This will serve as an anchor strip for the rear motor hook.

Having determined the design of the bulkheads, draw them in the side view as shown.

Now the nose block details should be determined. This should serve to give proper outline to the nose and be sufficiently thick for strength. The body sides will extend forward to the front of the nose block so only the top, front and bottom of the fuselage nose need be formed by the block. Consequently it should consist of an outline of balsa passing along the top and down around the nose front and bottom. This can be made most easily from a solid light balsa block, cut out at the center, but leaving a wall 3/16" thick. At the point where the bearing plug fits into it, shape to form a suitable base for the plug. The drawing shows block details and the way they should be inserted.

Now draw in bearing plug and bearing details. These fit into the nose block front blending with its outer contour, to complete the streamline effect. This part consists of a round shank which fits into a hole in the front of the nose block and a circular flange part at the shank front end. The back of this flange butts against the front of the block. A 1/8" hole should pass through the center of the plug from front to rear. The drawing indicates the details and how they should fit into the assembly. This part is unnecessary if the plane is to be wound without a winder; in such a case the nose plug would be part of the nose block and not removable. When winding with a winder the plug may be pulled out and the motor stretched to desired length for winding.

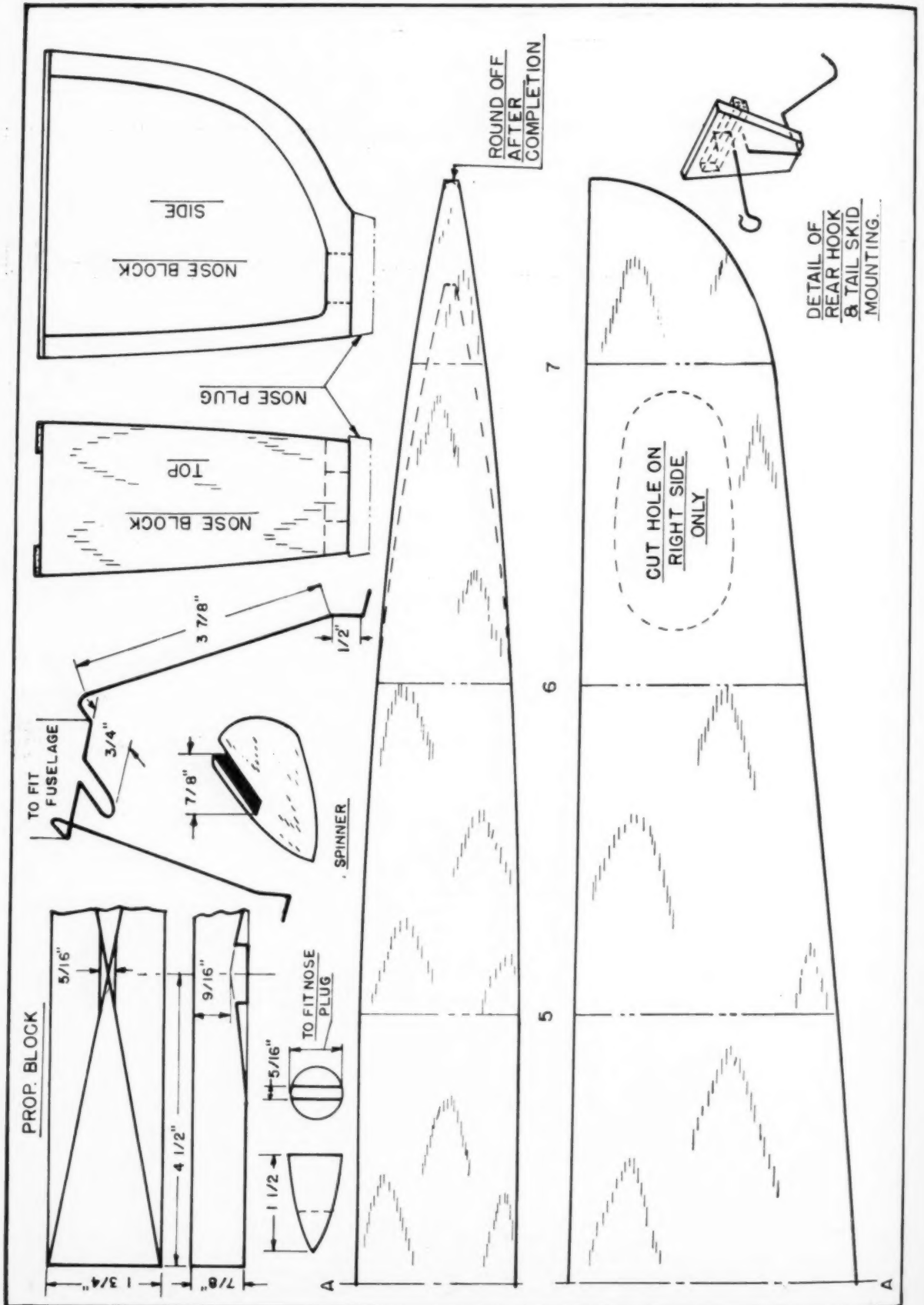
If a spinner is to be used the front face of the plug should be flat; however if the builder does not wish to incorporate a spinner on the propeller, the plug front face should be rounded. In the drawing two types of plugs are shown.

After you have worked out structural details of this part, incorporate them in the side view drawing, as indicated. A bearing must be included in the block assembly so that the propeller shaft will spin true. This may be a small, round piece of sheet metal with a hole in its center, the exact size of the shaft. It may be cut from a piece of tin with four points radiating from it; when these points are bent backward the part may be fastened to the front of the plug by forcing the points into the plug front face. The bearing hole should be centered with the center hole of the plug. This is indicated in the drawing.

Next design and include drawings for wire parts in the three-view assembly. These are: Propeller shaft, rear motor hook, tail skid and landing gear. All these except the landing gear should be made of .032 diameter steel wire; the latter should be of .050 wire.

To wind the motor with a winder a loop must be located at prop shaft end so the winder may be hooked through it and motor stretched out. Also the shaft must be anchored to the propeller at this point; at the rear the shaft must be bent into a hook to hold the rubber motor. Consequently at the front of the spinner, after the shaft is inserted, through the propeller and spin-

(Continued on page 60)





Ralph Jackson and his 27" job



Valesquez' beautiful flap job



Contestants pause to watch a fine flight

The East Gets Together

Highlights of the Seventh Annual All Eastern Gas Model Airplane Classic

THE passing of the All Eastern States Gas Model Contest is an infallible sign that the gas model season is well under way. This annual event was held at Hadley Field, N. J. on Saturday, June 7th.

It was a great contest; contestants and spectators were not disappointed. Excellent weather contributed to intensive flying activity throughout the whole day. Flights got under way comparatively early because of the excellent facilities provided by the Kresge Department Store, co-sponsor of the meet with MODEL AIRPLANE NEWS, and the efficient manner in which officials registered and qualified models for flight. The field was laid out in an excellent pattern for efficient operation; a temporary rope fence ran the length of the field, separating the spec-

tators from the "pits" which fringed the flying area. Centrally located was the officials' large tent, approximately 12' x 24'.

As fliers qualified they were designated to one of the four runways. Four roped-off lanes were provided in front of the Officials' Tent; one for contestants in each particular runway. If you flew from runway No. 3, you would line up in lane No. 3. Then as timers became available they were assigned to waiting contestants in the various lanes. This eliminated a great deal of confusion and "running around"; timers did not have to look all over the field and pick up contestants promiscuously.

The whole affair was well organized and everyone was pleased. Even the spectators
(Continued on page 58)



Contestants line up to check in



All the way from Nashua, N.H.



Johnson with his experimental plane



Brown and his unique canard



Landing gear of Jurist's plane retracts



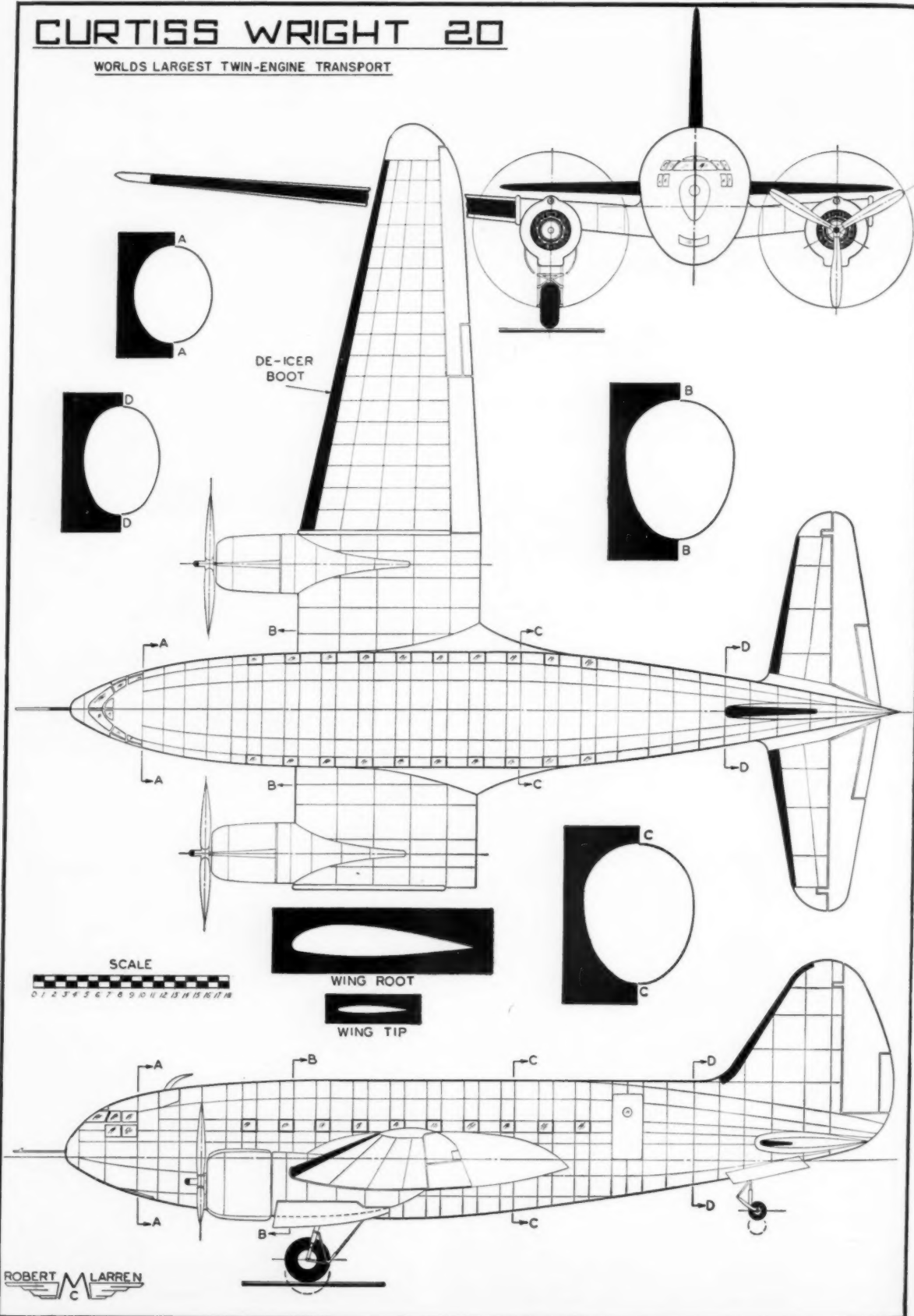
Winners Pat Viola, Bill Emmons and Frank Antosh



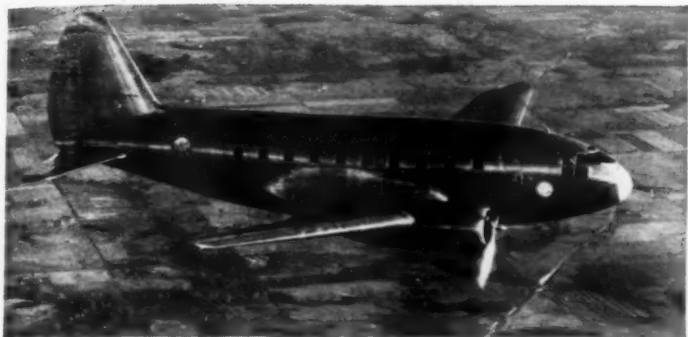
Headquarters Tent was the center of activities

CURTISS WRIGHT 20

WORLD'S LARGEST TWIN-ENGINE TRANSPORT



ROBERT M. LARREN
C



The Curtiss-Wright 36 passenger airliner, Model 20

BOMBERS, fighters and more bombers and fighters has been the vociferous cry of the nation's dizzily-growing aircraft industry. Just four years ago the Douglas Company in Santa Monica, California won the U. S. Army Air Corps competition for twin-engine bombers and received a three million dollar contract for their construction. That news made the headlines of every metropolitan newspaper in the country. An order for that tremendous amount was startling. Today anything less than a one hundred million dollar award scarcely attracts space on the financial page of the paper.

When the aviation industry is spoken of today it means but one thing to Mr. Average Man: bombers and fighters. But to us who have stuck with aviation through the lean days of the early thirties, have watched the birth of such almost-forgotten planes as the Curtiss-Wright "Condor," the world's first sleeper plane, the super-fast (then) Lockheed "Electra" and the amazing Douglas DC-1, have seen the airlines develop from hanger-corner offices to giant air terminals, from Liberty-powered Douglas biplanes to quadri-motored Boeing "Stratoliners," from helmet-and-goggle

clad, riding boot-legged "fliers" to neatly uniformed ship "Captains," the air-liner is still the back-bone of "aviation," is still the prime owner of the term: airplane.

And so this month we take a brief respite from the breath-taking stories of the "Martin Marauder," the "Yank in England," the "Blaster of Berlin" and the dozen other super-speed, super-armed, deadly aerial dreadnaughts and tell you the story of one of the most amazing of all the airplanes designed in the past dozen years. Here, then, is the story of American aviation's hard-luck hero, the Curtiss-Wright Model 20 Transport.

"Hard-luck?" You bet your life we mean hard-luck. Ask any old timer if luck doesn't play a part in aviation design and any of them will answer you: "Aviation is about 4% genius of design and 96% pure luck with the finished product."

Never in all of America's aviation history has a plane been kicked around like our Plane-on-the-Cover this month. First

Air Line Giant

The Plane
on the Cover

By **ROBERT McLARREN**

of all the Model 20 is utterly breath-taking in its design and performance. Here's a comparison that will prove it: the Boeing "Stratoliner" has **FOUR** engines developing a total of 4400 horsepower, a wingspan of 107 feet, a length of 74 feet, a gross weight of 45,000 pounds and a top speed of 240 miles per hour. The Curtiss-Wright

(Continued on page 64)



This gives an idea of its size

Why Not Club Contests?

THE Instructor is in receipt of a letter which goes like this:

"While talking with Victor Fritz of the Philadelphia Model Aeroplane Association recently, he said to me—quote—I think P.M.A.A. flyers are the cream of the crop, the best in the world, and it is my ambition to have ten of my boys compete against any ten in the country, and I haven't the slightest doubt but that they will give the others a convincing licking—unquote.

"So I wonder," continues Merrick S. ('Pete') Andrews, author of the letter, "if you would print this challenge to a contest between the P.M.A.A. and the world."

Now what wasn't mentioned was that Mr. Fritz was referring undoubtedly to an indoor contest—but even then, the challenge should not go unnoticed. Pete says that Mr. Fritz, who is now president of the Aero Club of Pennsylvania as well as a leader of the P.M.A.A., expresses the thoughts of the Andrews clan very nobly and that we ought to be able to drum up a little interest in a "contest" of this sort.

Sounds very good to us, my friend, and we'll wait to hear more of who will face who in the finals. Pete, incidentally, makes his hqtrs. at 5922 Nassau Rd., Philadelphia.

What really interested the Instructor was the suggestion a couple of clubs select teams and fight it out in some suitable arena. Of late so much emphasis has been placed on individual flying and records that much of the good fellowship and sport that can be provided by club competition has been lost.

Evidence that team flying has its big moments is the success of the Wakefield and Moffett international competitions. And one of the most keenly contested awards each year at the national meet is the Fred W. Megow prize which is given annually to the A.M.A. chapter or affiliated club placing highest in all the events. This annual club trophy has come to mean almost as much as the individual championship award, and to our minds that is a very fine feature of model aeronautical flying.

Some of the old timers in this hobby of

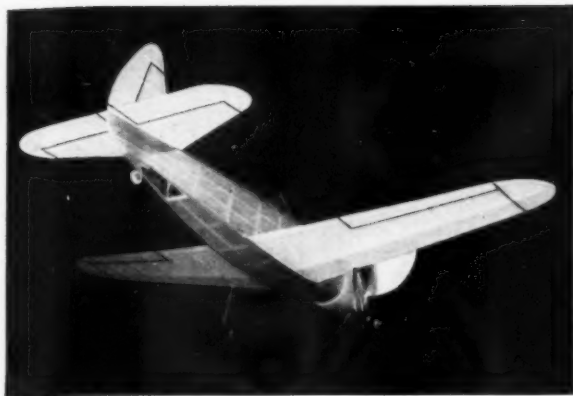
Asks the INSTRUCTOR

ours can probably recall the "telegraph" competitions that were held back about 10 years ago. Object was for two or more clubs to hold the same type flying events, either indoors or outdoors, in comparable flying spots, and check winners by telegraph to determine which club amassed the most points.

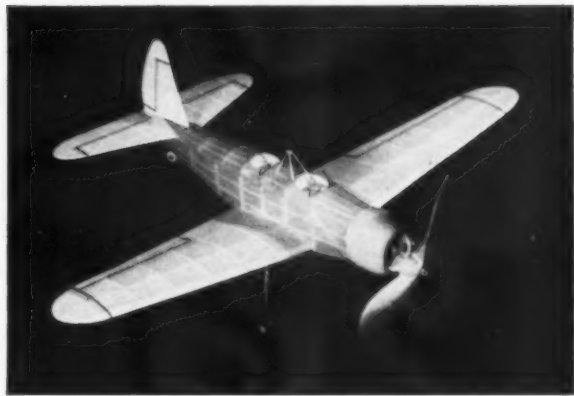
Not long ago the Stix, Baer and Fuller Model Builders' Club of St. Louis and the Jordan Marsh-Boston Traveler Junior Aviation League of Boston revived this type of competition with an indoor flying scale event. After several competitions, Boston came out slightly in the lead, if the old Instructor's memory serves him right—but there was so little difference in the final standings that it was almost a draw. Some very good performances were established and everyone seemed to feel that here, at last, was the different type of competition.

Along the same lines of this is the Webber-Bennett "traveling trophy" which was established by Academy leader members

(Continued on page 60)



Ample tail surface gives unusual stability



Trim, realistic and of simple construction

The Howard Trainer In Miniature

Building This Model of Uncle Sam's Latest Trainer Is Easy
With These Plans and Instructions

By
SIDNEY STRUHL

PRODUCTION has just been started at the Howard Aircraft Plants on their new two-place trainer, Model DGA-125, being built for the United States Air Corps and also for the private market. Because the Howard Trainer has a landing speed of only 50 m.p.h. and a takeoff run of less than 600 feet, it will fit all demands for a trainer; especially with the recent ruling forbidding student instruction at any large airports used as airline terminals, thus necessitating pilot training at small private airports and fields.

Powered with a 125 hp. radial Warner Scarab Series 50 motor, the Howard Trainer cruises at 108 m.p.h. and has a maximum speed of 118 m.p.h. The climb is 800 feet per minute, service ceiling is 13,500 feet. The empty weight of the new trainer is 1350 lbs. which carries a useful load of 607 lbs. and fuel for more than 3-1/2 hours of flight, giving the Howard a cruising range of

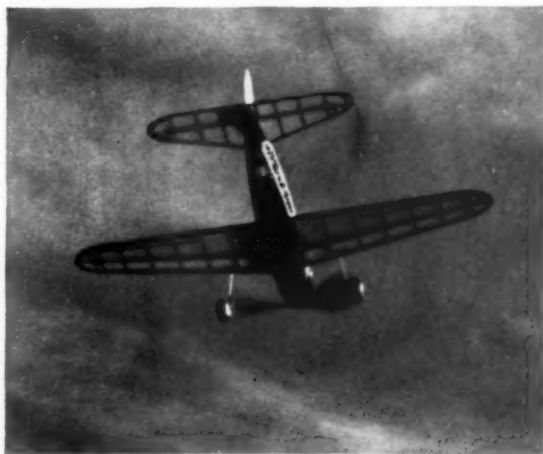
356 miles.

An eye has been kept open for ease of maintenance and efficient performance. Many new features have been designed

into the ship, such as wing tips which are replaceable. It's a known fact that the wing tips of any training ship always take a terrific beating while teaching our potential pursuit pilots how to make three-point landings. A "turn-over crash" protector has been built between the two cockpits and is stressed to support five times the ship's full weight. An unusually long landing tread of 9-1/2 feet insures safe landings. The wings and tail surfaces are of the same plastic construction used in Howard airplanes for the past five years.

The design of the Howard Trainer lends itself very admirably to a flying scale model; the ship has "stability built into itself." This fact is true in the model, too, even if it is a low-wing. Though the Howard is a low-wing job, its flight characteristics are very comparable to many a high-wing ship. The design also allows the model's con-

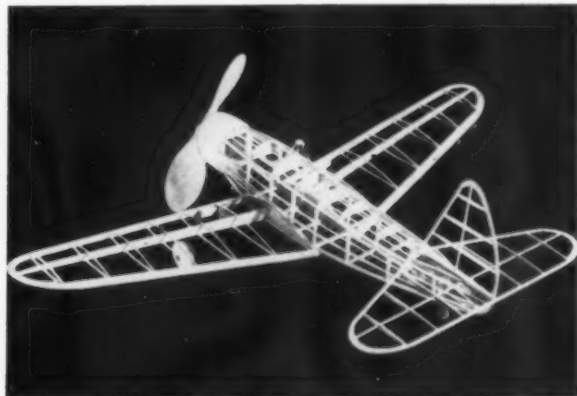
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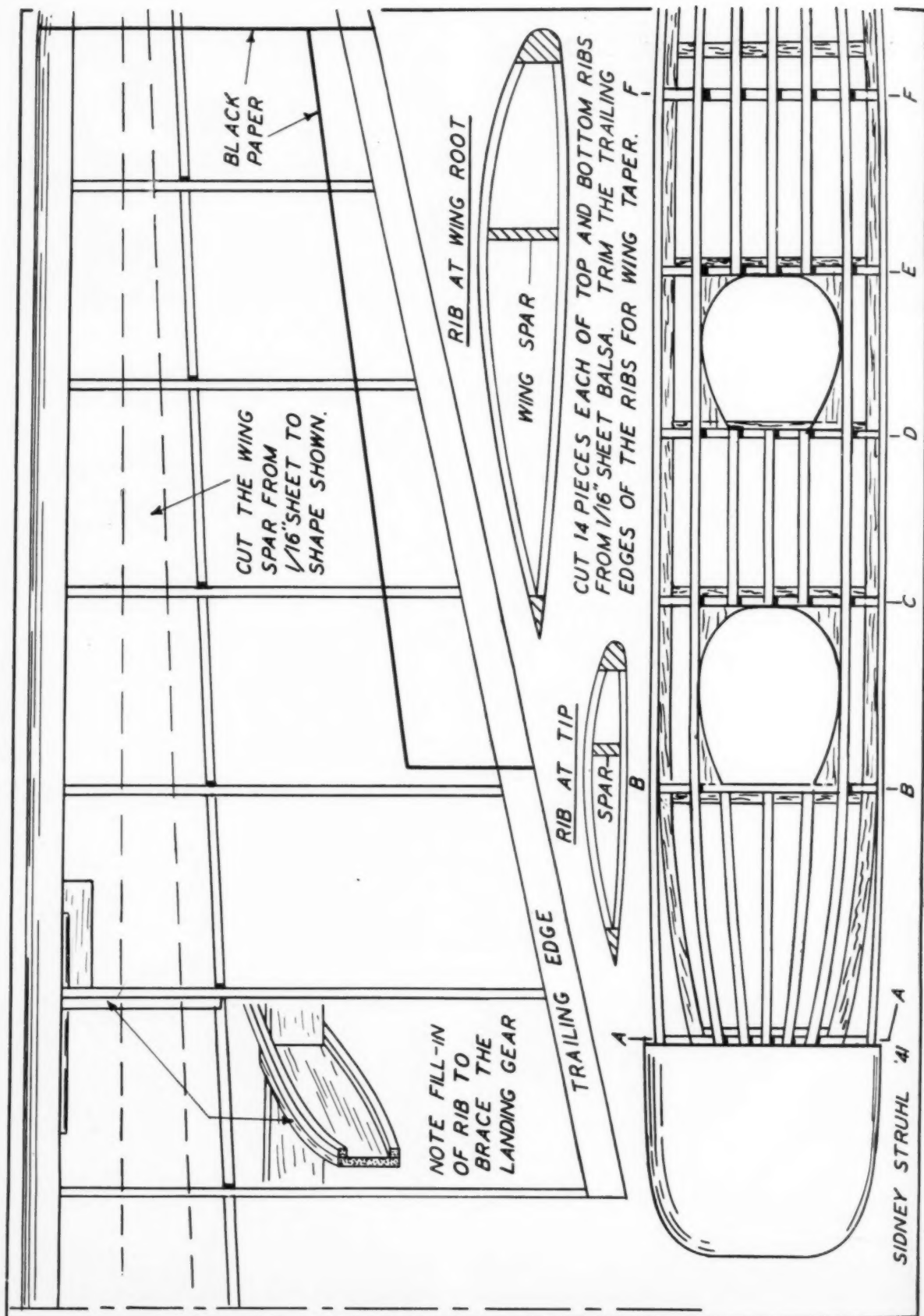
The model "passing over" in full flight



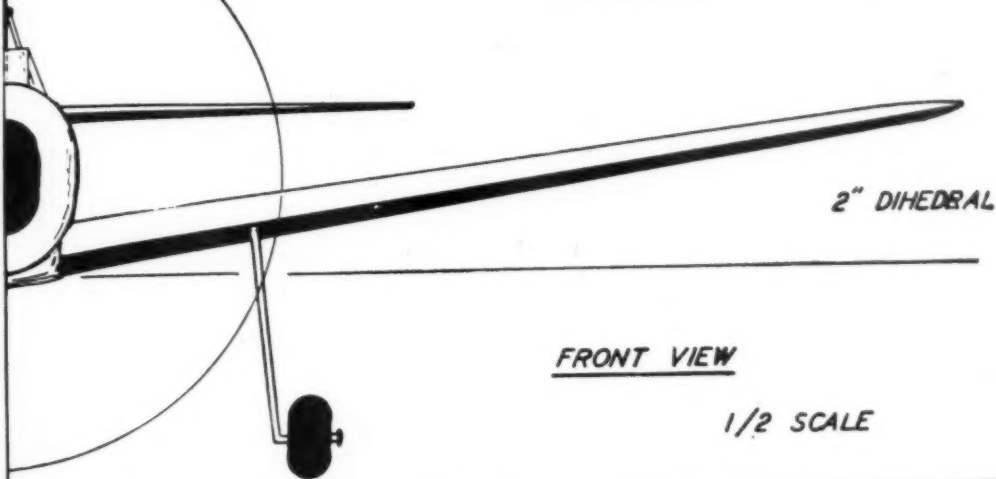
A wide blade propeller gives fine flights



The frame is very light but strong



THE HOWARD TRAINER



CELLULOID
WINDSHIELD



2 REQUIRED

CUT FROM
1/16" SHEET
BALSA.

FILLET
BLOCK

1/8" SHEET

.032

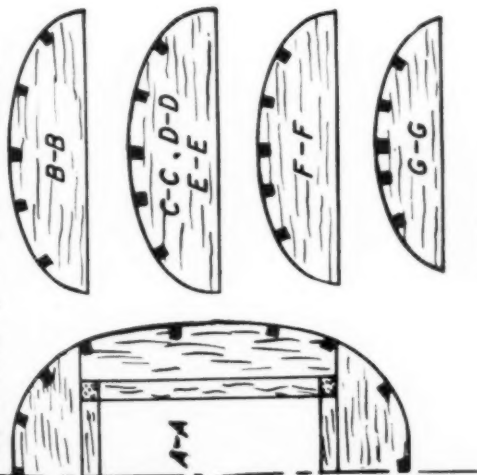
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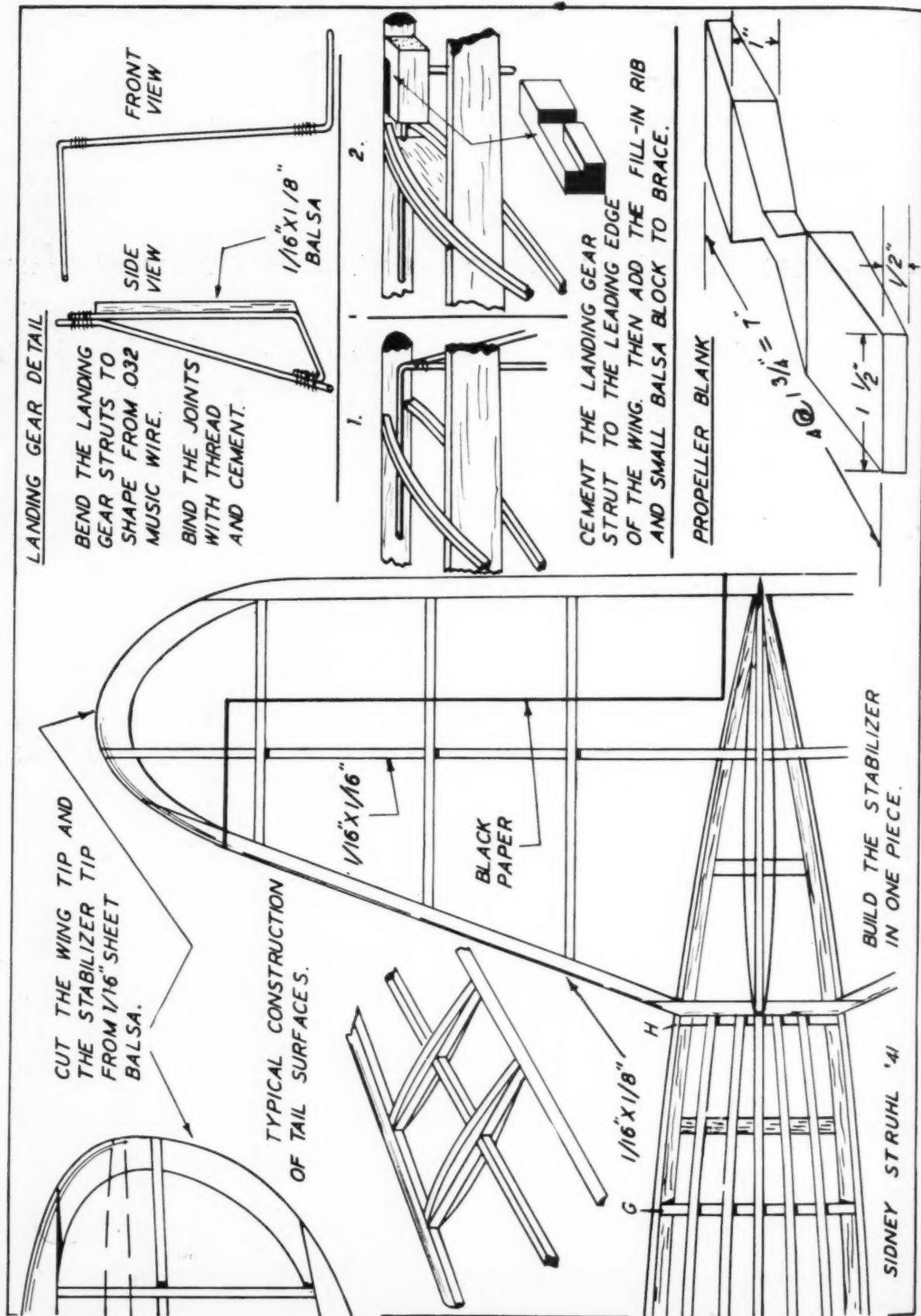
1/16" X 1/8"

SIDNEY STRUHL '41

FUSELAGE BULKHEADS

ALL ARE 1/16" SHEET BALSA







Herman O. Eley Jr., Newton, Mass., winner of Air Youth Scholarship for Spartan School of Aeronautics



Donald H. Coles, St. Paul, Minn., winner of first Air Youth Scholarship for Boeing School of Aeronautics



Benjamin W. Chalmers Jr., Springfield, Mass., winner of Scholarship for Casey Jones School of Aeronautics

AIR YOUTH OF AMERICA

News of Importance to Modelers

Winners of the Air Youth Scholarship Competition



THREE outstanding model builders from widely distant parts of the country are winners of the first Air Youth scholarship competition for aviation training, it was announced by the committee rating the winners.

Donald H. Coles, member of the aviation club of the Central High School of St. Paul, veteran of many model plane contests and a student pilot who has logged more than fifteen hours of solo time although he is not yet old enough to be eligible for a private pilot's license, is winner of first prize. Don will receive a two year scholarship to the Boeing School of Aeronautics, at Oakland, California and a cash allowance to cover his expenses while at school.

The second Air Youth scholarship is awarded Herman O. Eley, Jr., a resident of Newton, Mississippi. Herman has built more than two hundred scale and flying model planes and has done outstanding work as a volunteer aircraft spotter working with the 153rd Observation Squadron of the U. S. Army Air Corps. His scholarship will enable him to attend the Spartan School of Aeronautics at Tulsa, Oklahoma and take an advanced course in aircraft engineering or mechanics.

The third winner is Benjamin W. Chalmers, Jr., of Springfield, Mass. Graduating

from high school this spring, Ben has been active in model aviation for a number of years and is a member of the Aero Group of Junior Achievement. He will attend the Casey Jones School of Aeronautics at Newark, New Jersey.

More than a thousand boys entered the competition, despite the stiff requirements, and the judges had great difficulty in narrowing the field down to the final winners. Of the entire group approximately two hundred were recognized as having met the general qualifications for this type of training.

"The judges were interested in these boys because of the high quality of resourcefulness and initiative which they have shown," Thomas H. Beck, chairman of the judges committee and president of Air Youth, said in commenting on the competition. "Although of high school age, each boy has already furthered his aviation education by working at odd jobs at the local airport. In addition, they each have high scholastic records. All three qualify as potential leaders."

Mr. Beck also announced plans are now being developed to hold a second Air Youth scholarship competition during the school year of 1941-42. "Because of the high quality of response to this first competition we expect to have an even larger number of scholarships to award next year. We will announce further details in the early part of the fall," Mr. Beck said. Serving on the committee of judges with Mr. Beck were the following: Sanford

Bates, W. A. M. Burden, Lester D. Gardner; Charles H. Grant, editor of MODEL AIRPLANE NEWS; Robert W. Hambrook; Col. G. deFreest Larner; W. A. Patterson, and Edward P. Warner.

The scholarships were awarded "in recognition of the importance of youth in the development of the national aviation program," and were made possible through the generosity of the United Air Lines, the Spartan and the Casey Jones schools.

Candidates were required to have graduated from high school and give evidence of outstanding achievement in the field of junior aviation.

Characteristic of the ingenuity and drive of the boys who entered is the way the first place winner, Don Coles, has earned his flying time. As a result of his experience in building model planes, Don devised a demonstration trainer model with workable controls which a flying instructor in his town found useful in teaching student pilots to fly. By building these demonstration models, Don has been enabled to earn five hours of flying time for each model. He has already clocked fifteen hours in Piper Cubs and Taylorcraft ships. Don is now working on a model autogiro with a five foot wing spread. He is also experimenting with a dynamic prop tester, and a twenty inch model wind tunnel. As first prize winner, Don will receive tuition for a two year course in airline operations and engineering at The Boeing School. In addition, United Air

(Continued on page 58)

DOODLE BUG



Wingspan 25"—Length 15"

Typical of the popular lightplanes of today, this sweet little job could meet all comers for looks and performance. Beautifully finished in red and yellow, set off by black and white. Demountable wing is fastened by rubber bands which hook to dowels set in fuselage. Complete kit contains drilled nose block, formed wire parts, 6 inch propeller, 2-color tissue, and everything else necessary. Only **25c**

NEW! Scientific's 25" WING AN FLEET of CHAMPIONS

POSTPAID OR AT YOUR DEALER...

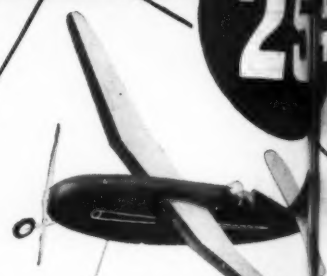
25c

WIZARD



Wingspan 25"—Length 16"

After you build and fly this model you'll understand why it was so named. Hops off the ground so quickly you'll be amazed at the consistently long flights it turns in. Detachable wing uses the rubber-to-dowel combination which prevents broken spars and allows easy flight adjustment. Strikingly finished in red and white with black stripes on fuselage. Complete kit is yours for **25c**



AIR RAIDER

Here's a pursuit type model that's really worthy of its place in the Fleet. Polyhedral wing can be made in the Fleet. Permanently in place. Colored brown and yellow with black and white stripes on fuselage. You'll burst and pride when you see this classy model with white stripes on fuselage, perfect 3 point come down to earth with a complete kit. **25c**

Just Out!

SCIENTIFIC'S
NEW 1942
CATALOG

Send
5c



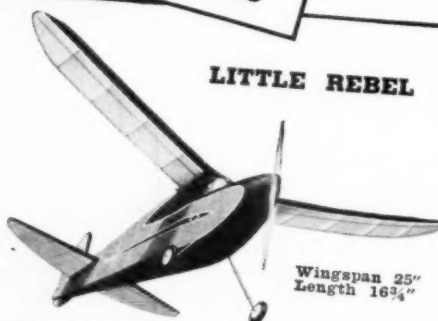
BLUE PHANTOM



Wingspan 25"—Length 15 1/4"

An eye-catcher, not only on the ground, but also in the air. The wing has windows on both sides of the cockpit for visibility. Gull-wing, open cockpit, single-seater type. The two-toned blue divided by white stripe. The "Phantom" in Class "A." Complete kit, containing all necessary parts for easy building, such as formed wire parts, 6 inch propeller, printed balsa, tissue, plans, cement, etc... **25c**

LITTLE REBEL



Wingspan 25"—Length 16 3/4"

Are you looking for "something different," that is easily made, and yet performs with the best? Here's a model that tops all of that with a color design that speaks for itself. Orange trimmed with blue and separated by white striping—black and white stripes on fuselage. Wing is fastened by rubber-to-dowel method. Complete kit contains everything necessary to build this model... **25c**

SKIPPER

Wingspan 25"—Length 15 1/4"

Its snappy low-wing neatly faces the fuselage sides, and the tri-cycle gear, marks this model as really "the-minute." Just look at that color design—its suggestive side-by-side blue and white color design set off by black stripes—nothing to be desired. Kit contains everything necessary to complete the model... **25c**



SCIENTIFIC MODEL AIRPLANE COMPANY

"GAS MODEL HEADQUARTERS"

218-220 MA-8 MARKET ST., NEWARK, N. J.

Although introduced for the first time just two months ago, Scientific's "Coronet" has already won nation-wide approval! And no wonder . . . for this classy model, a proven contender in either class "A" or "B," is incomparable in simplicity of construction and in low cost flight enjoyment! Consistent soaring ability incorporated with inherent stability assures you peak performance in any A.M.A. contest. Designed especially to meet the need for a more efficient gas model in the small motor class, the "Coronet" will give you performance-plus! And it has a climb of 2,500 feet per minute! Wingspan—46½"; Overall length—30"; Wing area—300 sq. in.; Total weight (with motor)—18 ozs. Complete kit, postpaid or at your dealer **\$1.95**

CORONET

Class "A" or "B"



For a new "High" in design . . . performance . . . value—order Scientific's "Flagship" today! Its sound aeronautical design incorporated with outstanding engineering features gives this new class "C" gas model the climb of a rocket and the glide of a gull! Fulfills all the requirements of every model builder, and is eligible for A.M.A. contest rules. Wingspan—78"; Overall length—44½"; Wing area—850 sq. in.; Total weight (with motor)—3 lbs. Complete kit, postpaid or at your dealer **\$4.95**

DE LUKE KIT. Same as above, plus the addition of red, white and blue Scientific dope, and 3½" pneumatic rubber wheels (in place of balsa wheels) **\$6.95**

FLAGSHIP

Class "C"

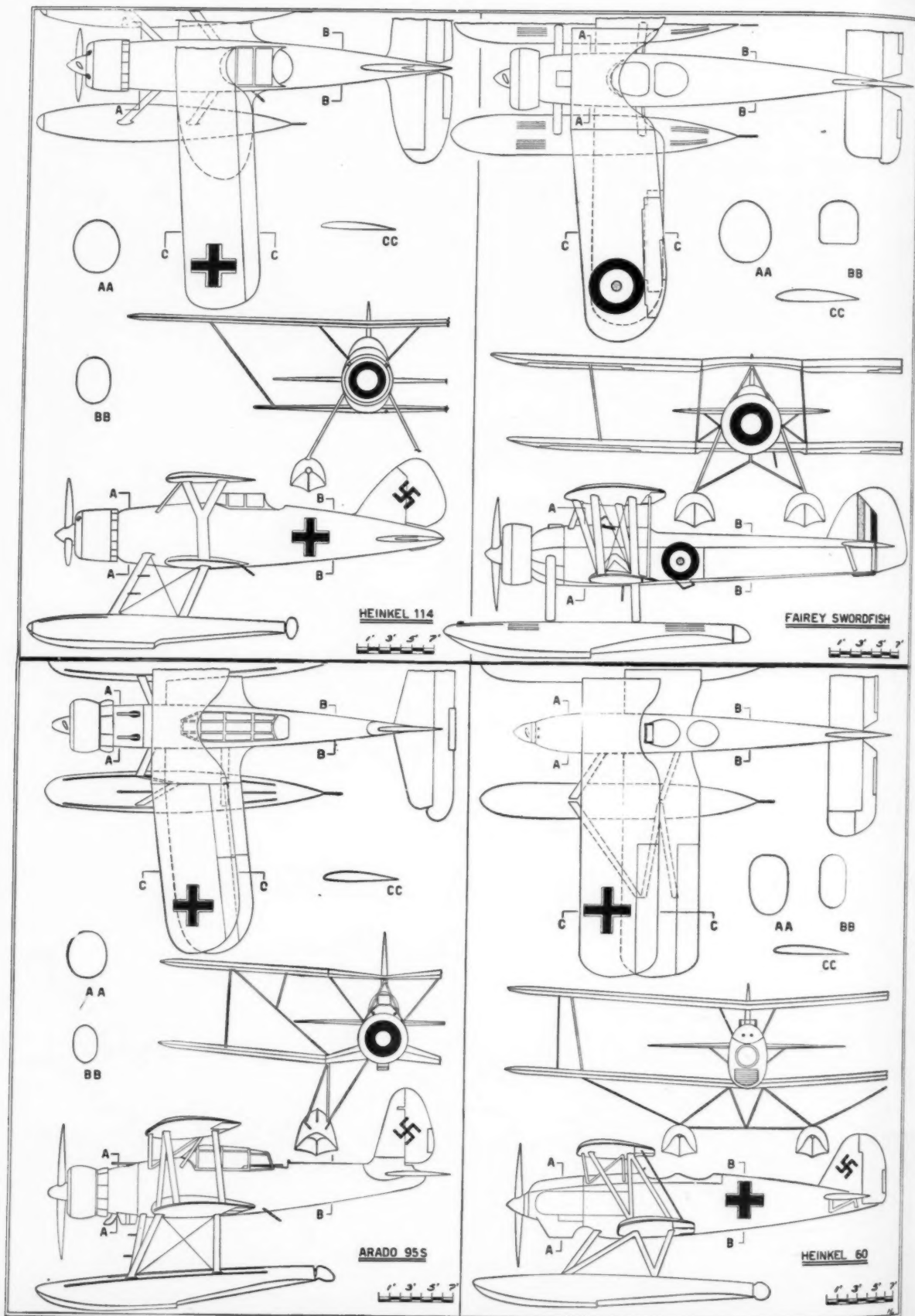


This new class "B" gas model, by Scientific, features an innovation in construction which enables even a beginner to produce a perfectly aligned streamline fuselage in HALF the time usually required! Designed purposely to meet the need for a more efficient, rugged, pursuit-like design combined with a fast climb and a slow, soaring glide, the "Varsity" will more than hold its own in any A.M.A. contest. Sport flying fans, too, will enjoy many hours of flight satisfaction. Wingspan—50"; Overall length—33½"; Wing area—370 sq. in.; Total weight (with motor)—22 ozs. It's an outstanding value at this low price! Complete kit, postpaid or at your dealer **\$2.95**

VARSITY

Class "B"





THESE PLANS MAY BE ENLARGED TO ANY SIZE BY PHOTOSTATING



The Bellanca YO-50, slow flying liaison plane, now being flight tested by the Army. It employs a two segment flap, similar in principle to the Grant flap but smaller, to obtain low flying speeds. A nose slot is also used

ARMY AIR CORPS—The Air Corps establishment at Oklahoma City, Oklahoma, has been named Will Rogers Field, in honor of the noted humorist who was killed in an airplane crash with Wiley Post at the controls August 5th, 1935.

Twenty-one giant Boeing B-17D four-motored "Flying Fortress" bombers recently hopped from Hamilton Field, near San Francisco to Hickam Field, Honolulu. Lieut.-General Delos C. Emmons, commander of the General Headquarters Air Force was in command of the brilliant but unheralded flight, which brought the first machines of the type ever to arrive in Hawaii. Col. Eugene L. Eubank was group commander, and he, together with Emmons, expressed great satisfaction with the performance of the huge bombers sent to replace the 800-mile range bombers formerly stationed at this far-flung island possession.

Consolidated Aircraft Corporation of San Diego has received an award of \$226,636,200 for manufacture of four-engine type B-24 long-range bombers. Final assembly of the ship will be made in the firm's new Fort Worth plant.

Boeing Aircraft Company of Seattle has



Special To Model Airplane News

received an award of \$95,242,696 for manufacture of four-engine type B-17E long-range bombers. Final assembly will be made in the firm's new Wichita plant.

Revised estimates for the United States' combined air forces now stand at 80,000 airplanes, an increase of sixty per cent over the 50,000 plane goal formerly announced. And even this is not the ultimate goal as production for this year will approximate 20,000 airplanes and the program calls for five years intensive manufacturing effort which is sure to produce an inclining production rate throughout the period.

First action upon an aircraft manufacturing cooperative plan which has been in process of formation in the Office of Production Management in Washington, is the recent announcement that Douglas and Vega of Los Angeles will pool production efforts for manufacture of Boeing B-17E type advance design "Flying Fortress." There will be a single material purchasing and ordering bureau for both firms and the production plan has been worked out so



A 50 lb. wind tunnel model of a high speed plane with the Davis wing that was recently stolen from the Manta Aircraft Corp. (Acme)

thoroughly and in such a detailed manner that even rivets and screws will be controlled in their dispensation and use by authorities in the planning section. The plan is already in operation but actual construction on the giant ships will not begin until early Fall at which time the new Vega factories on huge Lockheed Air Terminal in Burbank and Douglas' seven building plant at Long Beach will be complete and ready for production.

Lockheed's super-fast P-38 twin-engine interceptor recently was officially unveiled to the general public in a brilliant air show held by the "Los Angeles Examiner," morning newspaper, at elaborate Santa Anita Race Track in Los Angeles. The sky-demon was put through its paces by test pilot Milo Burcham before a crowd of 30,000 spectators who responded with adequate "ohs and ahs." Interesting revelation during test workouts of "the fastest fighting plane in the world" was that the ship literally "gets

(Continued on page 67)

THEY SAY—



LIKE A { TAKES OFF! REAL PLANE { FLIES!! LANDS!!!



REARWIN

SPEEDSTER 64" WINGSPAN Class 'C'
1/6 SCALE

GAS MODEL OF A REAL PLANE

The ONLY job that flies like a REAL plane—NOT A HELICOPTER! Does NOT dive when engine is cut out!

Complete "Definitely with" Kit

Including Fully Finished Notched and Webbed

Colored Bamboo Covering Paper (no colored dope)

Movable and Controllable Ailerons and Rudders

Puncture Proof Cork-tired Aluminum Balloon Wheels

1 1/2" Cork-tired Aluminum Spid Wheel

4 oz. Can Impareo Cement. 4 oz. Can Clear Dope

Two gas props, one for flight, one for bench testing

of Motor

Finest Quality Hard, Medium and Soft Balsa, Brass

and Copper Hardware, Aluminum Tubing, Round

Bamboo, Cement and Stripping Brushes, Panta Cores

and Sides fully cut. Hard Bass Wood for special

parts, with two sheets of full-size plans (22" x 50"

and 16" x 50" size) printed in eye-catching green ink

on heavy paper with separate Instruction Sheets, all

drawn and redesigned by an aeronautical expert and

war-time flyer.

This Complete Kit with Absolutely Everything Required

to Build the 7.4-in-1" Model.

\$4.50

Postage and Packing 30c

SUNDAYS at CREEDMORE That handsome REARWIN seen in weekly flights at CREEDMORE (in calm or windy weather) is an International FIRST model plane ever built by its owner! Emphasizing simplicity of plan, completeness of kit and ease in construction!

TOWLINE or LAUNCHING CATAPULT

40" SPAN DUPONT SOARER

An exact replica of troop carrier now in use by invaders, original design by Will Messerschmitt.

Goop-in-ge-1. This 40" scale model of the Dupont Soarer can be converted into a 40" glider model. We have copied the original in detail.

Can be launched by either towline or catapult. Six fuselage formers completely finished and numbered—as are 20 wing ribs.

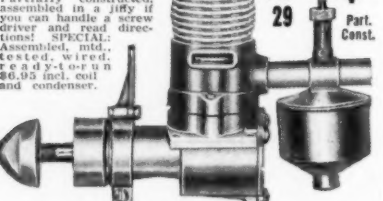
Nose piece completed. Wing tips, tail surfaces, leading and trailing edge, wing support, keel, streamlined struts, catapult hook, landing gear and wheel completely finished. Includes silk, paper & cement for wing and fuselage covering. Full size drawings and instructions. KIT—all complete.

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Stepping Up Your Power

(Continued from page 13)

these requirements.

To put it briefly, the air is scooped up in the celluloid funnel and transmitted to the motor air intake. The funnel is placed in the nose of the model, where air pressure is caused by the propeller wash and where the least amount of dust is present. A rubber tube is attached at the end of the funnel, run up through the nose of the model and then slipped over the air intake tube (see diagram). Simple isn't it?

And now for the actual practice: To choke your motor all you need do is squeeze the rubber tube between two fingers. This of course shuts off the air supply the same as if you were to place your finger over the air intake. Of course your needle valve will have to be changed or adjusted to meet the additional air force being driven into the motor.

WARNING: You can use this supercharger for only short motor-run periods. It is not advisable to use it for runs of over a minute or a minute-and-a-half, because the motor speed is increased to such an extent that longer periods may cause damage by overheating. These periods are adequate enough for the 20-second runs of today, and more.

May we suggest that all test hops be conducted with the motor running under normal conditions, merely by pulling the end of the tube off the air intake. When you are ready for your official flights just slip the rubber tube over the intake and your supercharger is ready for action.

And when we say "action" we mean that if your ship is adjusted properly it will, by far, outclimb any other model on the field with the same class of motor as yours.

Try it and see for yourself!

Academy of Model Aeronautics

(Continued from page 13)

Known as a patron of model aviation, it was Lord Wakefield's generosity and keen interest in aviation and model aviation which prompted him in 1927 to present to the Society of Model Engineers of Great Britain the trusteeship of a beautiful trophy which became the symbol of international sporting model aviation.

The Wakefield competition, held annually in the country whose team last captured the trophy, has served to interest many nations in competitive model flying. Lord Wakefield in a message to the contestants and guests assembled at a Wakefield International Competition was among the first public figures to call model aeronautical engineering "a science as well as a sport." He felt "its practical value is everywhere recognized, proof being afforded by the fact that many of the early enthusiasts in model construction have since become famous designers and builders of the aeroplane. Some of the younger competitors . . . may prove to be leaders in this great industry ten or twenty years hence.

"I hope they will not have forgotten the friendships and kindness engendered by these competitions, where twelve or more nations meet in a rivalry which is pure enthusiasm and goodwill. In this respect the world wide model aeronautical move-

ment has a value and importance which we shall do well to prize and preserve."

Service Clubs Active In Model Aviation

Interest in model aviation has grown to such proportions that many service organizations, such as the Exchange Clubs, Junior Chambers of Commerce, American Legion Posts and others have included model airplane building and flying in their aviation programs.

The Academy works in close cooperation with these organizations which conduct sanctioned competitions, as with all other groups genuinely interested in furthering model aeronautics. In sanctioning and publicizing meets and providing qualified advisers and assistants whenever possible, the Academy provides guidance and direction to the activity.

The National Exchange Club and its member clubs have been conducting model aeronautic programs with great success. Working with A.M.A. Contest directors, many Exchange Clubs have made plans to conduct one or more A.M.A.-N.A.A. sanctioned competitions during 1941.

The 14th National Model Airplane Championships held in Chicago, July 1 through 5, provided many service organizations with an incentive to hold local meets and send winners to the annual national competition. In addition to competing for a splendid array of awards at Chicago, national meet entrants each year have the opportunity to compete for the traditional Detroit Exchange National Meet Champion trophy, presented to the aeromodeler who amasses the greatest number of points in the competition.

Among the Exchange clubs sending aeromodelers to the National Competition are the Exchange Clubs of North Carolina who held their state model airplane meet at Wilmington, N.C., on June 29.

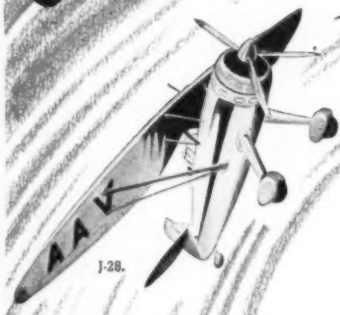
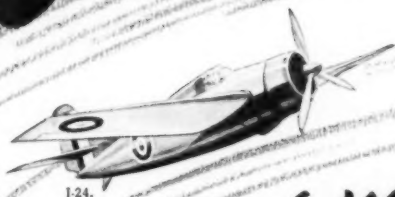
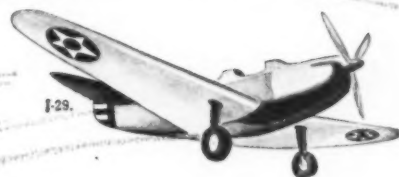
This Academy sanctioned meet climaxed a three day state Exchange convention and attracted model flyers from North Carolina, South Carolina and Virginia to compete at Wilmington's Bluthenthal Airport for prizes in rubber powered and gasoline engine powered events. Two grand prizes, all-expense-paid trips to the 1941 Nationals, given to the two contestants approaching nearest the records established at the 1940 National Meet.

North Carolina Exchange Club officers have indicated Exchange's role in state model aero activities by announcing, "It is our plan to hold a Tri-State Tournament as the special event of our State Convention each year. We are organizing model clubs in many cities of North Carolina and sincerely hope that every air-minded boy will join up and take part in this educational hobby."

Mayor T. E. Cooper, of Wilmington; City Commissioner of Finance W. Louis Fisher; and the Director of Public Works J. E. L. Wade, joined Exchange Club officials in extending a cordial invitation to all modelers who attended the Tri-State Model Aviation Contest.

Lloyd B. Hathaway, Director of Recreation for the city of Winston-Salem and A.M.A. State Contest Director supervised the competition.

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J-27. FOCKE-WULF "FW 190." One of Germany's newest fighter planes.

J-28. HENSCHEL HS-126. A well-known German general purpose and observation plane.

J-29. FAIRCHILD M62 Trainer. An American trainer used in training program for air cadets.

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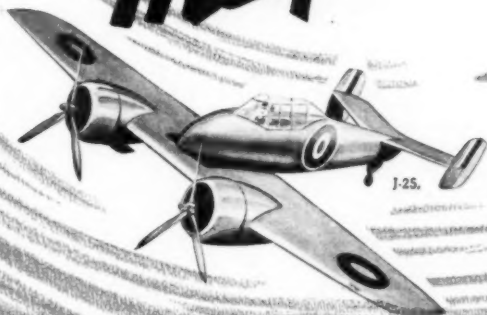
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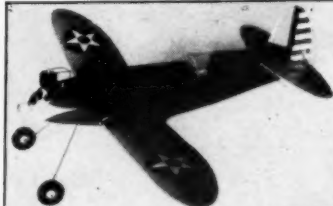
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SCHULENBURG Dept. M. TEXAS

The Howard Trainer in Miniature

(Continued from page 29)

struction to be very simple, light and strong.

The scale model of the Howard Trainer is the perfect scale model for the beginner because of its ease of construction; the perfect model for the expert who wants a low-wing model that will fly with the same precision of a well designed parasol ship.

Now let us get busy and build our Howard Trainer.

Fuselage

First of all line up the pages of the magazine so that you will have a complete fuselage plan.

The basic framework of the fuselage is the conventional square or "box" cross section. The base is made from 1/8" square balsa strips. All material should be of the lightest yet firmest grade. Pin the 1/8" square strips directly on the plans as shown by the wood in grain. Two sides should be built, one directly on top of the other to assure similarity. After the cement has set the two sides are removed from the plans and joined together as shown in the fuselage top view.

The bulkheads are now cut from light 1/16" sheet balsa and cemented in their places. All the 1/16" square fairing stringers are now added. You will notice the stringers along the side of the fuselage are cemented directly on top the fuselage uprights. Cut, from 1/16" sheet, two rib shaped panels, as shown in the side view, to act as the wing base. Note that a space is left to accommodate the wing spar and leading edge.

A small rectangular piece of 1/8" sheet serves as the rear hook station. Use several coats of cement at this joint. The rear hook is bent from .032 music wire. The cockpits are cut from 1/16" sheet balsa.

The cowl is shaped from a very soft balsa block 1-5/8" x 1-7/8" x 2-3/8". After the block is carved to proper cross section, hollow it out to thickness shown. The cowl former is cut from very hard 1/8" sheet and cemented very securely in the cowl. Drill a hole in the center of the cowl bulkhead for the hard-wood nose plug.

The fuselage should now be covered with Army Blue colored tissue. Water-dope the covering in the usual manner, then apply one thin coat of clear dope to the tissue after the water has evaporated. The cowl should be given one or two coats of clear dope and then one coat of thin color dope. Cut the windshields from thin celluloid, to the pattern shown, and cement them in their proper locations.

The crash protector is now made from thin bamboo strips and a small balsa streamlined block. Sharpen the ends of the bamboo struts and simply push them into the fuselage stringer and the balsa block; add a drop of glue at the joints to complete the job.

Tail Surfaces

To improve the flying qualities of our Howard Trainer it has been necessary to slightly increase the area of the tail sur-

faces.

Both the rudder and stabilizer are constructed in a similar manner. A complete frame is made first using 1/16" sheet for outlines and 1/16" square strips for ribs and spars.

After the cement has set this frame is lifted from the plans and very soft 1/16" square strips are cemented to both sides of each rib. These pieces are cut and sanded to a streamline shape once the cement has hardened; the leading and trailing edges are sanded to blend with the streamline airfoil also.

The tail surfaces are then covered in the usual manner with yellow tissue. Treat the covering with one coat of water and then, when dry, with one thin coat of clear dope.

Cement the stabilizer in its proper location on the top fuselage longeron, as shown in the plans. For added strength add small balsa blocks to the joints. The rudder is then cemented to the top stringer and the stabilizer trailing edge. Control surfaces may be shown by strips of black tissue doped to the surface covering.

Wing

The construction used in the wing is of the sliced-rib type, which is gaining such popularity. If you have never made a wing in this manner you may be sceptical as to its merits but once you build one you will be surprised at the ease of construction, its strength and lightness.

Space permits us to show only half the wing. You will have to trace the wing plan and then invert the plan to get the left panel.

Make an aluminum template of the rib at the wing root. Now with this template slice 14 upper ribs of 1/16" square and 14 lower ribs of 1/16" square. These ribs should be cut from 1/16" quarter-grained stock.

The leading edge is shaped from soft 1/4" sheet and the trailing edge from 1/8" sheet. Pin the leading and trailing edges in place and then cement the ribs to the leading edge, allowing them to overlap the trailing until the cement has set. Then trim the ribs to fit into the trailing edge. After the cement has set well, remove the wing from the plan and attach the lower parts of the ribs in the same manner. Cut the wing spar, to shape shown by the dotted lines, from 1/16" sheet. Slip the spar in place through the ribs and cement each upper and lower rib to it. The wing tip is cut from 1/16" sheet balsa and cemented in place.

Bend the landing gear struts from .032 music wire to shape shown in the plans. Note each strut is made in two pieces of wire. Bind the joints with thread and apply cement. Using several coats of cement, cement the struts to the inside of the wing leading edge. Now add the fill-in rib, as described in the plans, for strength. For extra strength a small balsa block is added over the landing gear wire. A small piece of 1/16" x 1/8" balsa is added to the rear strut. The wheels are carved from balsa and a washer glued on each side of the hub to act as a bearing. Slip the wheels on the axle and put a drop of cement at the end to retain them in place.

Cover the wing with yellow tissue and treat it with a coat of clear dope after



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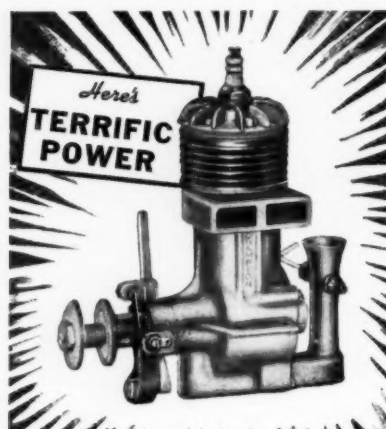
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spraying with water. Trim the leading edge ends and the wing spar to fit into the fuselage base with 2" dihedral at each wing tip. Use plenty of cement at these joints.

Propeller

A medium hard balsa block 1" x 1-1/2" x 7" is required for the propeller. Shape the blank as shown and then proceed to carve a right-hand propeller. Cut the back face of the blades first; carve about 1/16" undercamber in the blades. Sandpaper them with rough and smooth grades of sandpaper until the undercamber is completely finished. The uppercamber is cut away with care as the thickness becomes critical. The exact airfoil shape can be had by continuously checking with your fingers for differences in thickness. Now trim the blades to an elliptical outline and balance.

Bend a prop shaft from .038 music wire and slip it through a small hardwood nose plug, several washers and then through the prop hub. If a winder or free-wheel device is to be used, bend a loop in the end of the shaft; otherwise bend the end at a right angle and force it into the hub.

If reasonable care has been used in the construction of the Howard Trainer you may use as little as six strands of 1/8" flat brown rubber; otherwise eight strands will be needed.

It will be necessary to remove a small portion of the fuselage covering in the rear to aid in putting in the rubber motors.

Flying

Give the propeller a few turns and hand-launch the model over deep grass. A small clay weight may be needed if the ship appears tail heavy. Trimming by bending the tail surfaces is not advisable inasmuch as warping adjustments change themselves from flight to flight. Once the balance is obtained gradually increase the turns, feeling out your ship's characteristics.

The original model needed but a little weight added to the nose to produce perfect flights. The climb is very fast and the glide, although rather swift, is at a flat angle.

Adjust your model so that it flies in

large right-hand circles; that is, against torque.

Follow these instructions carefully and you will wind up with a fine miniature Howard Trainer, capable of long stable flights. Good luck!

Frontiers

(Continued from page 15)

day in the early part of President Roosevelt's administration when Seversky received its first order for fifteen training planes which was then considered a large order; just before the war Curtiss sold France 100 pursuits which appeared to be a phenomenal amount at that time. Now our government is ordering planes in lots as high as about 2000! This same mushrooming seems imminent in Canada with the major aircraft companies in receipt of enough orders to make it worthwhile to build new plants and really get underway.

Though Canadian engineers have designed some very excellent airplanes, such as the Noorduyn and the Fleet "Finch," they are mostly building planes designed by Great Britain and the United States. The Canadian plants ever increasing production will strengthen their hold on the situation and it should not be long before the many companies will be able to "stand on their own feet" and expand their engineering personnel to the point where they can design their own product. As Germany, Great Britain and the United States have their own styles of design, so will Canada, and they are bound to be good. Not alone have those few designs of the past been excellent, but the Canadian pilots have also proved to be among the best. Thus Canadian aircraft production is something really to watch these days. Below is some data on what the Canadian plants are now doing:

The DeHavilland Aircraft Co. of Canada, Ltd., one of the larger companies, has so far delivered about 400 Tiger Moth training planes for war needs, which is by no means a small amount. At this writing there is about \$8,000,000 on the books for some more of the same ship. The Moth is the first plane the student climbs into to start his flying course; it is equipped with an enclosure over the cockpit to keep students warm when operating in cold weather.

Fairchild Aircraft Ltd. is busy on the Bristol Bolingbroke, and when things are operating smoothly about fifteen are produced each month with production to go on indefinitely as far as the British government is concerned. We will probably see Fairchild turn to a more modern airplane shortly however. Their big high in orders at this date has been over \$12,000,000; that is comparatively close to what North American Aviation's was just a couple of years ago. This illustrates Canadian aviation's progress.

Canadian Associated Aircraft is building high-speed Handley Page Hampdens at the rate of close to fifteen a month. The last we heard 160 were on order.

Canada Car & Foundry Company appears to have the best setup so far, with considerable experience behind it and a cheering backlog in the neighborhood of \$30,000,000! C.C.F.C. claims it will produce a baker's dozen of Hurricanes every week. These fighters will most likely be employed in

(Continued on page 45)

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Canada for training pilots instead of actually doing battle in Europe. The first batch of Hurricanes to be produced amounts to 600 in round numbers.

Canadian Vickers Ltd. has struggled along with the manufacture of a few Northrop Deltas and then plunged into building the old Supermarine Stranraers. Thirty-five flyingboats, especially of the Stranraer type, is a big undertaking.

Boeing Aircraft of Canada, Ltd., located at Vancouver, B.C., has lately produced more smoldering timber than airplanes due to a big fire. Several Blackburn Sharks were built and delivered by the company and work was just getting underway to build 55 Consolidated PBY-5 flying boats. 825 workmen were employed, augmented by several truckloads of firemen, when the fire once got good hold of the plant. In view of Boeing's organization, the company may become one of the most outstanding in Canada. The Consolidated contract amounted to \$4,400,000.

Fleet Aircraft Ltd. is one of the more exploiting Canadian companies in that it has designed the Fleet "Finch" Model 16B and Model 60. Approximately 400 of the 16B have been delivered to date, and the advanced trainer, Model 60, is now going into production on its first order for 200. The Model 60 is a low-wing, all-metal monoplane with tandem seating. The rear pilot's cabin is raised above the front cabin for better visibility. The wing is interesting in that it is gulled into the fuselage and is elliptical in plan form. A single strut extends out from each side of the fuselage to the wing at attachment point of the full cantilever

lever landing gear. Powered with a 330 hp. Jacobs engine, the speed is 180 m.p.h. Fleet has also contracted to build 550 Tiger Moths and 150 Moths powered with American Menasco engines.

National Steel Car Corp. is building 116 English Lysanders and Noorduy Aviation Ltd. is well underway with its North American Harvards, the first having long since been delivered. The Noorduy "Norseman" single-engine transport has been built in quantities for the Royal Canadian Air Force.

There are now over 2,000 training planes in operation in Canada which means that an enormous amount of pilots are being prepared for the present conflict. Thus Canada is still in no danger of producing too many fighting planes to provide for its pilots, though production is mounting. But that winds up our discourse on Canadian aviation for the present. Maybe we can discover, in the near future, some Canadian firm that will venture undertaking the design of a new fighting ship.

The story about Pan-American Airways and T.W.A. each ordering 40 four-engined transports is certainly good news. Lockheed will be the builder of the fleet. It had been in the air for some time that something was brewing in the way of a big plane from Lockheed; though it has a good stronghold on the smaller twin-engine transport market it was not expected that the company would grab the big-plane commercial business away from Douglas and Boeing so effectively. It might have been expected that even Consolidated, Martin or Sikorsky, who have had years of big-plane experience and

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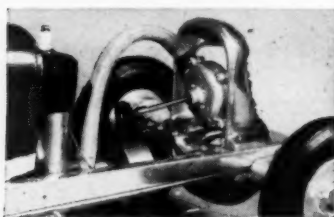
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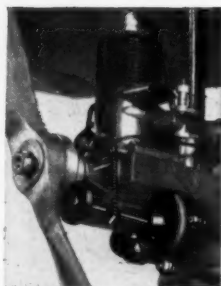
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have supplied Pan-American in the past, would have had a better chance than the outsider, Lockheed. But it is not performance alone that sells an airplane to a commercial airline (or even to the government for that matter); service and maintenance features are getting to be more than 50% of the selling factor, and that is the main reason why Lockheed was so successful in commanding an order for 80 huge transports. Lockheed, under the title of "Customer Service Department," has set up one of the finest service organizations ever developed by any aircraft company in the world. Not only does it provide good service for its customers, but takes care of servicing Lockheed planes ready for delivery and will go a long way towards instigating improved service and maintenance features in new designs. American aircraft in that instance is, on the whole, exceedingly lacking; the airlines have certainly had their troubles in the past in getting manufacturers to design a really practical high-speed airplane that could boast of not too many "non-operating periods." It was with this main purpose in mind that airlines formed their own service association and took the situation into their own hands to get the manufacturers to design more servicable airplanes. Now the service engineers with the manufacturers, what there are of them, have started their own organization to stimulate interest in "design for service" in their own engineering departments. Thus not only could Lockheed give the airlines a wonderful performing airplane, but also the information on how best to keep it in service, which is what the airlines expect.

The new Lockheeds, known as Constellations, will carry 64 passengers, including a crew of 7, at a top speed of 350 m.p.h. with a cruising speed of 285 m.p.h. Cruising range will be 5,000 miles. This is all done on four of the new 2,300 hp. Wright "Tornado" engines. In all likelihood the engines will be equipped with turbo-superchargers, as the Constellations are designed to fly at 30,000 feet altitude. The major troubles with turbo-superchargers, we are glad to note, have been surmounted and there is little, if any, skepticism that they will not operate satisfactorily. To be the largest transports in operation in the world, the Constellations could carry as many as 100 fully equipped troops. Gross weight is 37 tons. Incidentally Douglas is still going ahead with its DC-4 transports for United,

American, Eastern and Pan-American Grace Airlines.

In the pursuit plane category we have some news. It has been disclosed that North American's XP-51 incorporates a laminar flow airfoil that accounts for a good part of its exceptional performance. Grumman had some bad luck with its new XP-50 twin-engined fighter for the U. S. Air Corps when it was completely "washed out" in a crash when the landing gear failed to come down. The hottest thing in the air at the moment is Republic's new mid-wing XP-47B, nicknamed the "Thunderbolt" for appropriate reasons. It is powered by one of the giant 2800 Pratt & Whitney engines developing 2,000 hp., turning a four-bladed propeller of Curtiss electric design. Cuffs are provided where the shank of the four blades are mounted in the long hub on the propeller shaft. The cuffs add to the engine's cooling and provide better propulsive efficiency.

The U. S. Air Corps is test flying the first of the new Pitcairn autogyros as well as a new XPT-23 Fairchild training plane. The long awaited Curtiss O-52 is now rolling off the assembly line following tests made by the Air Corps with this experimental ship.

Howell Miller, widely known as designer of such racing planes as some of the Gee Bees and the late Frank Hawks' last racer, has formed General Aircraft Corp. to manufacture a tricycle-landing-gear lightplane with rudderless tail.

Next month we shall have more news of the other new planes in the offing.

Spiral Stability and How to Attain It

(Continued from page 9)

What are the nature of the force moments in Fig. A: do they correct, prevent further displacement, or increase it? Corrective moments act counter clockwise, but all moments here act clockwise; tending to cause greater displacement. They are moments caused by forces P, P₂ and L_c about the c.g. Under these conditions the plane will bank more steeply, gradually assuming the position shown in Fig. B. The rotational moments about the longitudinal axis are balanced at this angle of bank, and no further rotation occurs. However an unbalanced condition exists in the vertical forces: the lift force L_c is very much smaller than the downward pull of gravity W. Consequently the plane sinks while flying forward. If the whole plane drops, the longitudinal axis remaining approximately horizontal, air will strike the low pinion at a greater angle and the high one at less, thus producing increased lift on the former. This causes a righting moment and an increase in the vertical lift force L_c as the plane assumes a more horizontal position laterally. It would then continue to circle at this final balanced banking angle. If force L_c then is greater than W, the ship would climb; if less, it would sink rapidly while circling and eventually crash.

However, as the bank gradually increases from the angle shown in diagram A to that in B, the lift L_c gradually decreases so it is much less than plane weight W. Consequently it does not support the plane in horizontal flight. Instead the plane's nose gradu-

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ally drops. This occurs simultaneously with the gradual increase in bank so that when the plane assumes the attitude shown in B, the longitudinal axis (center line of fuselage) is pointed downward and the plane is nosing toward the ground. As this process develops speed is accelerated simultaneously due to the gradually increasing angle of dive.

Therefore, instead of sliding sideways, the plane noses in following dotted line C, and producing an airflow over the low pinion nearly parallel with its chord; only slightly from the side. This may produce either equal lift on both pinions or greater on the high one, depending upon the nose-down angle. If the latter is steep, the high pinion will continue to lift more; if the plane noses down only slightly, the speed may not increase materially, the sideslip and resulting side pressure on the low pinion being enough to produce a righting effect.

Usually, however, the latter is so slight that the angle of bank is not reduced sufficiently to increase lift Lc to equal or exceed the downward force W.

If it is possible for the speed of the plane in position B to be increased, making lift Lc at least equal to W, while the longitudinal axis is horizontal, then it will continue to circle without the nose dropping. In this case the speed will have to be great

enough, at the angle of bank assumed, to increase centrifugal force O so it will equal O', and resultant S, to equal S".

From this analysis it becomes evident that the secret of spiral stability lies in: 1. creating an arrangement of forces that allows the plane to bank at as small an angle as possible when turning, because the less bank, the greater is lift force Lc compared to downward pull W. 2. Using as little fin area as possible, in order to prevent nosing down effect during a bank; thereby keeping the longitudinal axis as nearly horizontal as possible, causing maximum possible lift on the low pinion to decrease the banking angle.

Consequently the first consideration is, how to design the plane so as to reduce disturbing moments and produce large counter clockwise or corrective moments, thus insuring a minimum angle of bank.

Fig. A shows an unstable plane with the forces acting on it when banking slightly. Force L is the air reaction perpendicular to the wing; the resultant of Lc and Ps. This and force P create a clockwise disturbing moment about c.g. If the plane's design can be rearranged so L will act at a point to the right of its present position, the disturbing moment will be reduced. If L acts to the right of the center of the fuselage, or if P acts below c.g. corrective moments result. How can this condition be created?

First, if the keel area is lowered so it extends considerably below c.g., the pressure P, on the fuselage and landing gear, lateral area will be lowered. This may be accomplished by lowering the fuselage and keeping the motor weights high, as in Fig. C. Force P now acts below force O, creating a righting moment. Force L acts closer to the wing center reducing the disturbing moment (L x D) to a small fraction of its

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former value. L acts closer to the wing center for two reasons. First, the wing being above the fuselage decreases the blanketing effect of the fuselage on the low right pinion, the lift on which is thereby increased, bringing the resultant lift on the whole wing nearer the center.

Second, less wing dihedral can be used without impairing lateral stability because of the high wing effect, provided fin area is reduced proportionally. A large fin with small dihedral causes spiral instability; producing a nosing down effect in turns.

With less dihedral the high pinion lifts less and the low one more, thereby causing the resultant lift L to act closer to the wing center. The difference of projected area, presented by the two pinions to the side air pressure caused by skidding while turning, creates the difference in lift. With large dihedral, the high pinion's projected area is relatively large, while air from the side strikes the low pinion less squarely. Decreasing dihedral, reduces lateral projected area of the high pinion and increases that of the low one.

The plane shown in Fig. C, therefore is more spirally stable than plane A. Here the forces are in balance, righting moment caused by P , balancing the slight disturbing effect of force L acting to the left of center line SS . Unlike the plane in Fig. A, bank will not increase and no sinking or spiral diving will result.

On the other hand when the ship is suddenly thrown over into a steep bank by a wind gust as in Fig. D, it sinks, due to reduction of the lift force L_c .

However, unlike plane B, it has assumed a steep bank suddenly instead of gradually. Consequently speed has not increased nor has the nose dropped. This is the vital difference between planes B and D, though both are banked steeply. Because of the steep bank but no increase in speed, air spills out of the high pinion greatly reducing the vertical lift component L_c without increasing centrifugal force O . The plane, therefore, slides down sideways under the pull of gravity, the longitudinal axis being horizontal. Consequently the air strikes the low pinion from the side at a sharp angle, not nearly parallel to the wing chord as in B. This produces intense side pressure with resultant lift far to the right of the wing center on the low pinion and a consequent large righting effect. In Fig. D, the lift L increases to L' , creating the large righting moment $L'-D$. A small disturbing moment P_sU is caused by pressure P_s on the keel area, acting to the left of W during the sideslip; however, this is so small compared to the large righting moment that it is ineffective.

The duration of this righting effect is dependent upon the size of the fin. When the banked plane starts to sideslip with its longitudinal axis horizontal, the side pressure not only acts on the wing to right the plane, but on the fin as well. This tends to hold up the tail while the ship slides sideways, causing the nose to drop simultaneously but gradually as the plane flies forward. If the fin is small the nose will drop slowly and therefore very little, before the plane is completely righted: If large the tail will be held up while the plane slides and the nose quickly drops to an excessive angle by the time lateral

A message from Chicago

Hotel Morrison
Chicago, Ill.
July 2-6, 1941

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It is with great pleasure that I have this opportunity of congratulating the owners of Broken Junior products for making such a splendid showing at this great 14th Annual Model Airplane Championship Meet and also for the preparatory work which made this occasion possible.

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recovery takes place. Then the plane will be in a diving position and may or may not pull out into a climb before it strikes the ground.

Consequently it is advisable to use as little fin area as possible to insure quick lateral recovery without excessive nose drop. If the fin must be large the only cure is increased dihedral, insuring quick recovery to compensate for the large nose depression. Too much dihedral, however, increases disturbing forces so do not use more than is absolutely necessary.

Small fin area, therefore contributes extensively to the effectiveness of other design features in spiral stability. If strong righting moments exist a larger fin may be used than when these moments are weak or cause unstable reactions. In some cases fin areas large enough to insure directional stability, are too large and destroy spiral stability. This is more apt to occur with midwing planes than parasol types. Consequently when properly designed, the latter are universally more stable in all respects.

However, spiral stability may be assured in all types if keel area or side fuselage area is extended well below the c.g. so the c.l.a. is below c.g. The higher the c.g. relative to the wing, the larger the wheel area below the c.g. should be. This increases the righting moment of side pressure P, to compensate for the increased disturbing moment of lift force L, acting further out on the high pinion because of the high c.g.

Summarizing, spiral stability is increased by:

1. Low center of lateral area (keel area below c.g.).
2. High or parasol wings.
3. Small dihedral, (6 to 8 degrees) when fin Area is reduced proportionally.
4. Small fin area. (5% to 7% of wing area.)
5. Minimum propeller torque. Large propeller torque causes excessive banking and a resultant tendency to spiral dive.

Planes with these characteristics will be spirally stable under all conditions of flight, and not limited only to stable climbing flights.

The Flounder Takes Wing

(Continued from page 17)

are applied and allowed to dry before the wall is cemented in place.

The top of the firewall, of balsa, goes in place, being cemented to the lower plywood section, the motor bearers and, of course, the stringers and top of the cabin. Formers of 1/8" sheet extend down the fuselage to the beginning of the rudder, and these with the stringers, make up the fuselage top. Be sure this portion of the ship is thoroughly dry and recemented, before applying the keel.

Note the keel is pieced. The first keel, which is really a glorified gusset, is of 1/8" sheet balsa preferably hard stock. The first section of the keel, 1/8" x 1/4" medium balsa, is cemented in place and when dry another piece of the same material is cemented over it.

By scaling the sub-rudder carefully, using the 1" squares, this section may be easily duplicated. It is built of 3/16" x 3/4" hard

balsa and when completed is cemented to the keel strip. Install the wire hook, cement it in place. The next step is the cowl.

The cowl is constructed in four pieces (bottom) and two pieces (top). The bottom is built of 3/8" x 3" x 4 1/4" sheet balsa, soft, for the side members, while the center portions are of 3/4" soft sheet. Cement the side pieces to the firewall and the motor bearers. When this is dry insert the center pieces, after you have cut them to a snug fit. Let the edges protrude slightly, then sand the dry assembly to a streamline shape; giving it several coats of cement, sanding between coats, to form a good base for color dope.

The top cowl portion consists of two pieces of 3/16" sheet balsa, cemented to the top of the motor bearer and former 1. Once dry this is sanded to give a smooth contour with the rest of the fuselage.

Before covering wire the fuselage, using any standard hook-up (the one that come with your motor). The essentials of the ignition system (coil, penlites, timer) are inserted as shown on the plans. Motor skids, of gumwood 5/16" x 3/8" (for Bantam) are cut as shown, and bolted to the motor. The motor is then slid into place; the side bolts are bolted through the motor bearers to the mounts. To facilitate this operation, the nuts should be cemented to the inside of the inner mounts, with washers underneath to provide more cementing surface. The ground wire, wire to the points and condenser may also be installed; the fuselage now is complete except for covering.

Wings and Tails

The tails are conventional in construction. The drawings clearly indicate procedure used in forming the slightly-lifting airfoil in the elevator, which is achieved with a sand-block. Do not attempt to cut trailing edges exactly to outline as you build; instead let the pieces of wood protrude and cut them to desired outline when assembly is dry. Ribs are cut (or butchered) to shape AFTER assembly is completed and cement dry. A good sanding will reduce leading and trailing edges to airfoil shape.

The rudder is constructed in the same manner as the elevator. It is not cemented to the elevator until after covering has been done.

Build the wing in halves. Ribs are cut of 1/16" sheet. Build each half separately, of course; the proper outline of one being determined, place the wings against each other to insure both tips are the same. A feature of the wing is that two 5/32" spars are sufficient to give ample strength.

After the sections are completed (being built perfectly straight) the polyhedral is easily formed in the following manner:

Place the wings on your bench, center sections together. Eleven inches from the center, on each side, place a 1 1/2" block of wood under the rib, thus giving you the first dihedral. With this as a proper angle, butt join the center section, using the dihedral former to secure the joint. Of course you must bevel the trailing edges slightly at their joint; the leading edge also must be similarly beveled.

By cutting a slight amount off each side of the top spar you will find the procedure quite easy. The dihedral formers go on

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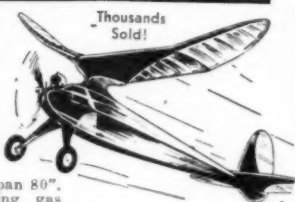
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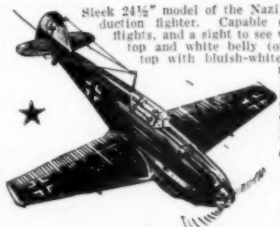
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each side of the two spars, and the space between, is filled with scrap bits of sheet to give added strength. Cement this and all other joints thoroughly. It is best to pin the trailing and leading edges to the table to insure the holding of all joints for at least two or three hours while cement is drying.

To form tip dihedral cut two pieces of wood (any wood—an old piece of plank will do) each 5" high. Place these pieces (which are really jigs) directly under the tips, after you have severed the tips as indicated, just to the outside of the ribs. Pin the wing tips to the outside bit of wood used as a jig; then you may form the joint. Cut from the top spar again until the joint is approximately at right angle. Then again bevel the joint where the trailing edges meet, the joint where the leading edges meet; cut the bottom spar on a slight bevel also. The joint is a butt affair and the polyhedral formers (shown in the plans) give the exact angle. Follow them and you will be absolutely sure you are duplicating the original.

After the polyhedral has been formed, add the cap strips of 1/4" x 1/16" balsa. When these have been cemented and have dried, thoroughly sand the wing. Recement all joints two or three times, to insure sound construction.

The original Flounder was covered with double tissue; the first coat running in one grain direction, and the other the opposite way. This insures a great deal of strength with a minimum of weight. The first coat is applied as though you were covering with bamboo or other similar fabric, except

dope is used instead of cement. It is water-doped, and when the water has dried, give it two coats of clear dope. Apply the second coat in the same manner, only tacking the tissue to the OUTSIDE of all sections (i.e., leading and trailing edges except under camber of wing). Water-dope the covering again; two coats as before. Color dope trimming may be added if desired.

When fuselage is covered, dowels of 1/8" birch may be inserted in their proper places, according to the plan.

Flying and Adjusting

Due to the fact that the CG is relatively high, a slight amount of down-thrust in the motor must be used in flying. First flights should be made with reduced power. The only adjustment the Flounder needs is a slight amount of left thrust and a bit of right rudder. The thrust (left) is about 3 degrees. The rudder should be set about 1/16" to 1/8" to start with. More adjustments may be added, but the above amounts have proved sufficient in all ordinary flying.

The Flounder is a tough little ship, but at the same time is one of the most dependable and startling in the writer's hangar.

Gas Lines

(Continued from page 21)

Picture No. 2 shows Elmer Powell's latest Class A gas job, powered with a Bantam. Powell lives at 279 Jackson Avenue, Jersey City, N.J. The plane has a 300 sq. in. wing and a tail moment arm of twice the wing chord at the center section, which affords a

quick recovery. With a normal size tail such a plane could easily be disturbed from normal flight and might be unstable unless the stabilizer area was increased in proportion to the reduction of tail moment arm below the normal amount of half the wing span. The stabilizer area of such a ship should be in the neighborhood of 35% of the wing area. Another feature of the ship is an inverted Clark Y stabilizer, which gives added stabilizer effect without added area. The ship's total weight is 18 oz.

Now let us take a long jump into the future and consider picture No. 3. Here David Bailey of 152 Stormont Street, New Concord, Ohio, presents his version of a tailless fighter with a three-wheel landing gear. This model is selected as this month's Originality Contest winner. Such a design is not beyond the realm of possibility and would unquestionably serve as an efficient fighter. Bailey says:

"It was designed as a two place fighter with the pilot located well forward of the leading edge; the gunner is in the swivel turret at the rear of the fuselage. The wings are swept back considerably to give longitudinal stability. End plates increase wing efficiency, the tips of which serve as rudders. Wash-out is incorporated in the wings to make longitudinal stability possible with the sweepback. The ailerons act also as elevators. The mythical 2000 hp. engine is located over the c.g. back of the pilot; this reduces pitching and stalling moments, instability reactions controlled usually by the tail surfaces."

Longitudinal control in tailless models naturally is not as effective as in normal ship, consequently weights should be centered over the c.g. Bailey has made provisions for fixed wing guns, heavy machine guns in the revolving turret and a rigid gun firing through the prop shaft. Without question a full scale ship of this design would be exceedingly efficient provided longitudinal stability could be attained. The model shows an accurate conception of values and great ingenuity.

In the June and July issues plans and instructions were given for a Fokker D-8 gas model. Here in picture 4, is another Fokker D-8 built by Fred Salmon of 1204 Walnut St., Berkeley, Calif.; he also realized the value of this ship as a gas model. It is powered with a Baby Cyclone Model F; has span of 62 in. Though a scale model, the general design setup makes this an excellent contest flier.

Mr. C. H. Grayson of 4031 Galveston Road, Houston, Texas, public relations officer of the Houston Model Airplane Club, tells us the club has succeeded in bringing to Houston the South West Gas Model Association 1942 Convention. It has also secured the sponsorship of the Exchange Club for the 1941 contest to be held July 20th. Club headquarters are the Texas State Hotel. Modelers here have been very active and the state gives promise of being one of the foremost model building in the union. Col. W. H. Reid, commander of Ellington Field, has been most helpful and has generously given his valuable time in the development of model aviation.

Picture No. 5 shows Mr. Ed Bergdorf, club president, congratulating Col. Reid and extending his appreciation for his kind cooperation. Mr. Rob Connell looks on.

Many readers know our old friend, Mr. Ken Willard, the old model builder who is now professor at Parks Air College, East St. Louis, Ill. Picture No. 6 shows him with his newly designed "Baby U-Control" plane. It is a 33" monoplane, powered with an Atom and suitable for contest work. He says:

"In reality it is a backyard specialist, one which I have flown within the confines of an ordinary football field or baseball diamond—the corner sandlot, if you will.

"It requires only 6 or 8 hours to build, is easy to adjust and has several safety features incorporated in the engine mount, wing mount and landing gear. The control system used is based on the general principles of the average u-control, but has a mechanism which is simpler and gives more positive control. The plane can be made to take off over obstructions, fly towards them, zoom over and land beyond, and does not require the tremendous speed characteristic of most u-control types. The speed of the model can be varied from 12 to 35 m.p.h."

Recently a National Hobby Show was held in Oakland, Cal. (May 15-17), in which there was a feature exhibition of all types and ages of model planes. One of the most interesting in the group is shown, with its builder Mr. Rodrick, in picture 7. Apparently this ship looks an inefficient contraption; however it required real genius to create, for Mr. Rodrick built and flew it in 1909. Probably it is one of, if not the, oldest models in the country, all in one piece. It is powered by a complete and efficient steam motor.

The large Clipper shown in the upper righthand corner, and which was featured at the head of "Gas Lines" last month, was judged the most outstanding model from the standpoint of design and size. Its builder is John Walker. The small Miss Tiny to its left, built by J. M. Wade Jr., was judged first from the standpoint of neatness and workmanship. Mr. Rodrick's plane was judged the third outstanding model, particularly because of its age and type of power. The steam engine which powers it was constructed entirely by hand and turned a propeller at 2200 r.p.m. when carrying a pressure of 70 lb. per sq. in. in its boiler.

We wonder if it would be difficult for present-day modelers to create, "from the ground up," such an original plane. Through no fault of their own, builders can now purchase many prefabricated model units, making unnecessary the arduous labor to construct them—and—on the other hand—depriving them of the little difficulties which stimulate ingenuity and added ability. But perhaps model builders do not look at it this way.

Tony Riccardi of 928 W 50 Place, Los Angeles, Calif., says:

"After making ten models, including a Spad, Pfalz 03, Fokker Triplane, Fokker D-7, D.H. Comet, and spending about 12 hours on each, I think I have finally completed one worthy of being shown in 'Air Ways'."

Here it is, picture 8; a complete SE-5 of 6½" span and mounting one Vickers and one Lewis gun. Though a solid scale, it incorporates many details, including a realistic pilot in the cockpit.

Ernesto Cyril of 109-37 164 St., Jamaica, N.Y., contributes picture 9, which is inter-

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esting in more ways than one. It is an exact flying scale model of the Amiot 144 bomber; typical of French construction, based on the idea of load carrying rather than speed. It also has the unusual feature of being a twin motor ship. Cyril says:

"It has a wing span of 30", all balsa construction and contains many features such as moving bomb doors, cabin doors, movable machine guns, bombs, movable control surfaces, cockpit controls and removable rubber motors. It is of such light construction that it makes some really startling flights."

In the picture the rubber motors do not show and apparently the plane mounts scale propellers. We wonder where Cyril has hidden the power and if the scale propellers are replaced with flying ones.

Picture 10 shows a common incident in the average model builder's life. This young man's gas job has landed on telephone wires after a successful flight; thus presenting an interesting problem of retrieving. The plane was finally released from its perch, in good condition, with a long pole in the hands of the young man who has started up after the ship. This is just another incident where the average modeler is forced to develop athletic prowess, whether or not he wishes it. It might be an idea to have a monkey as a mascot—under such conditions he could climb out on wires, limbs and other impedimenta and recover entangled planes.

Picture 11 shows the nose of a Custom Cavalier owned by the three Hurd brothers, Bob, Ivan and Gene of Lawrence, Kans. Ivan built the plane and Gene, a machinist, made the entire motor with the exception of the spark plug. This little powerplant has a lap piston and cylinder; weighs 15 oz. bare and turns an 18" Ritz prop at approximately 5000 r.p.m. The motor displacement is .99. We are indebted for this picture and information to Blevins & Son Cycle Shop.

Robert L. Marchant of the AMA Exchange Gas Model Club of Denver, Colo., sends picture 12. Here you see Cowboy Jim Wenrich, foreman of the Glass I Ranch, who has turned to chasing gas models instead of steers. Marchant says:

"While the other cow pokes spin yarns in the bunk house, Cowboy Jim spends his time studying and building model planes. He herds dogies all week long, but on Sunday mornings he can be seen riding up the valley on his pinto with a model strapped across the saddle-horn. It is a common sight to see Jim start his motor, watch the takeoff a few minutes, then jump on his cayuse and follow the plane wherever it goes. Jim and his pinto have chased his model so often he swears that she, Gwendolyn, has learned to do it herself; he simply rides along to pick up the plane.

"The only time Jim wears his 'store clothes' is the night he attends our club meetings. Then he sits uncomfortably perspiring under his high collar, his feet squeezed into unbecoming black oxfords."

This is certainly a new angle to gas model flying and has great possibilities. We hope other cowboy's follow Jim's example; it is really quite an idea. It might also be an idea for dude ranches. Incidentally, Marchant writes further:

"Since foreman Jim has been successfully flying models, cowboys from the Campbell Ranch, Pinkerton's Draw, Spalding's Cotton Grove Ranch and the Highberg's Sheep

A REAL GASOLINE ENGINE \$4.95 ★



ABSOLUTELY COMPLETE

Everything is in the kit including Champion spark plug, COIL, CONDENSER, tank and cap, ignition wire, cylinder, piston, connecting rod, timer, crankshaft, all screws, nuts, bolts, simple illustrated instructions, etc. Every part is fully machined and finished. A SCREWDRIVER IS THE ONLY TOOL YOU NEED. EXACTLY THE SAME PARTS THAT GO INTO THE G.H.Q. ASSEMBLED ENGINE.

Here is your opportunity to buy a kit of the famous G.H.Q. Gasoline Motor. ABSOLUTELY COMPLETE—ALL MACHINING DONE—READY TO ASSEMBLE. All you need is a screwdriver. No mechanical knowledge required.

A large bore, 1/5 H.P., engine at a low price than any small bore engine. Complete with Coil and Condenser.

ONLY \$4.95

AN ENGINEERING TRIUMPH . . . Never Before at So Low a Price!!

Indeed an engineering triumph—accomplished by outstanding G.H.Q. designers and engineers, who have constructed into the G.H.Q. motor everything that years of exhaustive scientific aerodynamic research could produce—geared to the highest possible degree of perfection. But more than that, the acid test . . . an overwhelming response. Thousands of users in all parts of the country are praising, recommending, and endorsing this scientific achievement. It seems as if everyone in America wants one. The most hair-raising thrill you've ever experienced will be yours with the G.H.Q. motor—actually one of the most powerful motors ever constructed. Has broken records for amazing performance.

30 MINUTES TO ASSEMBLE

ALL PARTS WARRANTED

Imagine operating your own G.H.Q. 1/5 Horse Power gasoline engine—small enough to fit in the palm of your hand—yet turning up over 7000 revolutions per minute and powerful enough to fly model airplanes of from 4 to 10 foot wingspan, and propel model boats from one to six feet in length and midjet cars that travel over fifty miles an hour!! There are also hundreds of other ways you can enjoy using this miniature yet powerful power plant—for small pumps, generators, compressors, blowers, fans, grinders and countless other experimental purposes.

Your G.H.Q. gasoline engine will be far more than just a toy for your spare moments. It is a scientifically constructed mechanical marvel that will thrill you with thousands of hours of pleasure. You will get a real kick out of controlling with your finger tip the surge of power your engine develops.

This engine has been tested and proven over the last eight years, OVER FIFTY THOUSAND OF THESE

ALL PARTS FINISHED & GUARANTEED



POWERFUL LITTLE G.H.Q. ENGINES ARE NOW IN ACTUAL DAILY USE. Why not join the ranks of these hobbyists?

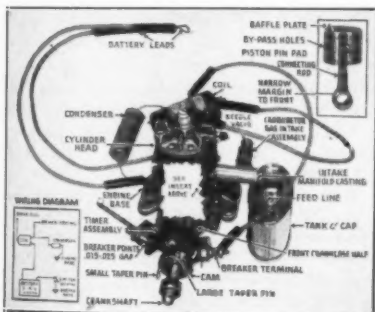
ENGINE IS COMPLETE and Ready to Assemble

Your engine comes to you with every part completely finished. Our factory-trained skilled mechanics, using the latest automatic precision machinery, have finished each and every part to the last detail. You merely assemble the parts in accordance with the few simple instructions given, using only an ordinary screwdriver, and inside of thirty minutes, your engine is ready to operate.

Not only will you and your friends have the thrill of seeing an engine ASSEMBLED BY YOURSELF operating, but you will gain a knowledge of gasoline engine theory and practice that will be of real practical value to you.

SPECIFICATIONS OF NEW 1941 MODEL

4 Port 2 Stroke Cycle. 3/4" Stroke. 15/16" Bore. 300-7,000 R.P.M. Bearing Surface, 1 1/4" Long. Crankshaft, 5/16" Diam. Rotation, Either Direction. May be run inverted. 1/5 Horsepower. Class C under NAA Rules.



DEALERS!

Get your share of G.H.Q. business! Write for new Discount Schedule.

This identical G.H.Q. Gasoline Engine Kit is also available in factory assembled, fully bench tested and ready-to-run form.

This comes to you already tuned up . . . ready to mount and run, complete with coil, condenser & wires.

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FREE

Send for free literature on G. H. Q. Gas Engines or send 6c for Jumbo Hobby Catalog and choice of free aviation or wings pin.

HOW TO ORDER:

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We ship Collect C.O.D. for balance. For shipments outside U.S. send full amount plus \$1.00 for packing, postage and insurance.

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MANUFACTURERS OF

Miniature Gasoline Engines and Model Airplanes

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ORDER TODAY — 24 HOUR SERVICE



The only nationally advertised \$4.95 kit that includes a coil, condenser and wires.

**Identical Engine
Less Coil &
Condenser**

\$3.95

G. H. Q.'s EIGHTH YEAR!

Thousands of Satisfied Users! Read some of these testimonials on file with us:

J. B., Providence, R.I.—"A few weeks ago I received the G.H.Q. motor kit and it is running perfectly. I hope to write you soon and tell you about some excellent flights."

R. H., Prairie du Chien, Wis.—"Your motors sure can take a lot of abuse and knocking around and yet perform perfectly. I have had two in a period of about two years and have seen higher priced motors give less service and performance."

W. W. W., Russellville, Ark.—"I received my G.H.Q. Motor Kit and am very well pleased."

W. L., Claysburg, Penn.—"A wonderful motor that thrills any air-minded person. Strong and neat looking. As good as motors costing twice as much."

A. K., Hillside, N.J.—"I still can't understand how you can put such a dependable and rugged engine on the market at such a low price."

E. T., Sayville, N.Y.—"Received my G.H.Q. Kit okay and am more than delighted with same. You've got 'em all beat for price and performance."

R. P., Hamburg, N.Y.—"I want to extend my personal thanks to G.H.Q. for their prompt service. The motor I ordered was received within 24 hours. Such service cannot be surpassed. I also want to say that I have the motor running perfectly. I shall do all I can to help promote the success of G.H.Q."

H. H., Midlothian, Ill.—"Motor assembled correctly and performs perfectly. I am fully satisfied."

**THE G. H. Q. GAS
ENGINE CAN BE
USED IN BOATS,
MIDGET CARS & PLANES
WITHOUT ANY CHANGES**

The G.H.Q. Gas Engine sold six years ago for \$35. Over 7000 were sold at \$8.50. Today, you can secure a vastly improved engine kit for only \$3.95 or \$4.95 or factory-assembled for only \$6.50. How is this possible? Simply because we have invested thousands of dollars in tools, jigs, dies and equipment to produce the only mass-production motor in the market. All parts are uniformly perfect.

**15,000 G. H. Q. ENGINES AND
KITS SOLD IN THE
LAST YEAR**

Boasting Thousands of Satisfied Users!

The Sky Chief

only \$6.95

**FAMOUS FOR
ITS LOW PRICE
and
HIGH PERFORMANCE**

**BLOCK-TESTED
UNCONDITIONALLY GUARANTEED**

Class "C" 1/5 H.P.—Complete with Coil & Condenser

*Sky Chief "Lightning" 3 ounce Coil
*Bore $\frac{1}{8}$ " stroke $\frac{1}{8}$ ", displacement .526
*R. P. M. up to 13,000 with 13" propeller.
*All bearings are Diamond-bored and Micro-lapped
*Weights approximately 10 ounces with coil and condenser

*Multiple-finned Cylinder made of Molybdenum Iron
*Piston centerless-ground and Micro-lapped with PERFECT CIRCLE RINGS for longer motor life
*Heat-treated Crankshaft made of polished-ground steel scientifically balanced.

Not a kit—a completely assembled motor ready to run.

American Supercraft Corporation Union and Lake Streets
Chicago, Illinois, U.S.A.



Making
Immediate
Shipments

Ranch have their models ready for an early contest."

Picture 13 shows the Potter family—three generations of model fans—from Alexandria, Va. They may be seen at most contests within 300 miles of their homes; sometimes they stray even farther. They say they can recommend this sport to other families who wish to grow young again.

Picture 14 shows activity at the California State Championship Gas and Rubber Model Plane Meet, held May 3rd and 4th. It was sponsored by the San Francisco News and San Francisco Exchange Club. On May 3rd rubber power events were held at Phelan & Ocean Ave. Field; on the 4th, gas power events were held at Abel Field.

Jim Morris won first place in the Sr. Outdoor Fuselage Event with a time of 2:28.1. Open Outdoor Stick Event was won by Robert Amos with a time of 1:39. The Hand-Launched Outdoor Stick Event Jr. went to Charles Dossett with 3:5. Jim Katayma won the Sr. division with 2:27.3 and Robert Amos the Open with 2:1. In the Gas Event, Sr., Clyde Holloway won first place and Bernon Oldershaw won the Open division. Thousands of spectators were on hand to witness and cheer both safe landings and spectacular crack-ups.

Out of a possible 23 winning places in the rubber events, 14 went to members of the Frisco Vultures club of 731 47 Avenue, San Francisco; Robert Amos was top man.

California

Theodore L. Ravellette of 3124 Fourth Avenue, Sacramento, a member of the Sacramento Model Airplane Club ("Skyo-

neers") and Academy State Director, sends us a report of another very large and successful Cal. meet.

The annual Superior AMA Gas Model Contest held recently, was the largest AMA-sanctioned gas meet held in Calif.; there were 112 contestants. The longest flight of the day was over 42 minutes and four national records were broken, which now are pending before the National Contest Board. Winners were:

Donald K. Foote, 24:37.8; Carl Giudici, 14:40.6; Don Lampson, 14:13.6; Donald K. Foote, 14:06.6; Jack Cudd, 13:18.6; W. H. Pittenger, 13:15.5; Ralph Igler, 12:23.6; Richard Pittenger, 10:10.3; Gordon Peterson, 8:59; Bob McCord, 6:12.6. Gene Larson won Class A with 6:11.4; Don Lampson, Class B with 14:13.6 and Donald K. Foote, Class C with 24:37.8.

Pennsylvania

The Third Allegheny Mountain Area Model Meet, held on May 18th, at the north end of the Pittsburgh-Butler Airport, attract a large number of contestants from over one hundred mile radius, and proved of great interest to the numerous spectators. Among the famous figures on the field were Carl A. Hopkins, State Contest Director of West Virginia, who acted as honorary meet official.

In the Gas Event following were the respective winners:

Byham, Robert...2:46.7...Meadville, Pa.
Byham, Louis...2:44.5...Meadville
Scuro, Jos...2:43.4...Pittsburgh
Stevens, Marshal...2:21.6...Meadville

Morris, Jas...2:20.8...Chester, W.Va.
Fuselage, R.O.G.:
Gummell, Edw...2:16.4...Pittsburgh
Damratouski,
Leon...1:18.4...B. Club of Pgh.
Merkel, Justus...1:05.5...Monaco, Pa.
King, Wm...45.2...B. Club of Pgh.
Breitenstein...37.5...B. Club of Pgh.
Stick: H.L.
Niehaus, Owen...2:16.9...Rochester, Pa.
Laughlin, Rich...1:18...Midland, Pa.
Damratouski,
Leon...1:13...B. Club of Pgh.
King, Wm...58.7...B. Club of Pgh.
Gummell, Edward...47.5...Pittsburgh
Stick: H.L.
Niehaus, Owen...41.2...Rochester
Gummell, Edw...29.8...Pittsburgh
Ganserwicz, Ray...19...Pittsburgh

The competitions are becoming keener due to the fact that in each event a season trophy is being awarded to the yearly high points winner, and the running is getting tough.

On the fifteenth of June, the airport was the scene of the Pennsylvania State Exchange Club Championships with events in Gas Class A, B and C, as well as Fuselage, Stick and Tow-Launched Glider. Six trophies, merchandise and motors were given to winners.

Indiana

The Third Annual Purdue Aeromodelers Outdoor Meet was held at West Lafayette on May 4th. Beautiful weather prevailed, with the result many planes drifted away on risers. Some idea of the excellence of times turned in can be gleaned from the fact Carl Goldberg placed fifteenth in the Gas Event with an average time of 4:16.4, a very good time in any contest. Contestants came from as far as Milwaukee. Many Chicago modelers attended, including Ed Lidgard, now a private at Chanute Field. The Chicago delegation took 7 of the first 10 places in the rubber powered events. The Noblesville Model Maniacs charted a bus to come from Indiana; the Anderson (Ind.) Club also was present. Ed Lidgard placed first in the Rubber Event, with an average of 6:16; he also made the highest single flight of the day, 16:35.2. The Gas Event was won by Paul Schroeder, freshman engineering student at Purdue. Paul hails from Rochester, N.Y. His average time was 7:52.5. Harold Tremps of Anderson was a close second with 7:47.5. James Bennett Jr., of Indianapolis, won the Glider Event with 1:49.2.

Massachusetts

The newly formed Witch City Gas Model Club of Salem is becoming very active and is holding regular meetings at Day's, 50

KEEP Your SHIP in SHAPE

General Batteries Motor spark
Voit Wheels Tough, live rubber
2-47 Fuel Steps up power as much
Blue Crown Plugs Designed for high
Rite-Pitch Props Individually tailored

AT YOUR DEALERS
Obtain above products and JIFFY GAD-
GETS from your dealer. Do not write.
Dealers see your jobber.

Model Associates Corp. Chicago

Centre St., Danvers. Members plan to attend the many contests held from June 22nd to September 7th at Springfield, Mass.; Newport, Middleton, R.I.; Fall River, Mass.; Pawtucket and Philadelphia.

Coming Events

July 27—Alliance, Ohio—Gas contest sponsored by Flying Screwballs. Events: Classes A and B combined, Class C. Over \$300 prizes. AMA rules. Flying from 8 A.M. to 4 P.M. Entry fee, 50c. Register with Lyle Crist, 611 S. Union Avenue, Alliance. Meet will be at Miller Airport, several miles northeast of the city.

August 3—New York City—Gas model meet for Classes A, B, C and Open. Flying from 10 A.M. to 5 P.M., at new field on East 177th St., between Eastern Blvd. and East Tremont Avenue, Bronx, New York City. Events limited to first 150 contestants who are residents of Greater New York and New Jersey. Entry blanks available from A. Hasselbach % Jackson's Models, 3079 Third Ave., New York City.

August 30th, 31st, September 1st—Cleveland, Ohio—1941 Scripps-Howard Junior National Air Races. Over \$1000 in prizes. Events: Aug. 29, Registration; Aug. 30, Stick, Speed and Towline Glider; Aug. 31, Gas Models; Sept. 1, Fuselage, Flying Scale and Original Design. Meet climaxed by banquet and attendance at the National Air Races. Event is sponsored by the Scripps-Howard Newspapers, headed by *The Cleveland Press*. Aiding to make this a highly successful event are: The National Air Races, Cleveland Chamber of Commerce, Women's Chapter of N.A.A., and Cleveland Chapter of the Ninety-Niners. Special hotel rates will be in effect. For entry blank write Ed Clarke, Junior Aviator Headquarters, *The Press* Building, Cleveland. If entry is in Cleveland before August 28th there is no fee; if received after this date there is a fee of 50c.

Notices

L. H. Johansson recently lost a Bowlus-type tow-launch 48" glider in the vicinity of 77 St. between Astoria Blvd. and Northern Blvd., Astoria, N.Y. When last seen it was approximately 500 ft. high and still climbing. It was painted red with black trimmings. Any information concerning this model will be appreciated by Johansson, who lives at 32-57 48 St., Astoria.

Bud Van Wyk of 79 Zabriskie St., Haledon, N.J., writes he approves of Mr. Casano's remarks in a recent issue, in which it was suggested that the A.M. has a list of stolen motors printed monthly in leading magazines. In the past Mr. Van Wyk has lost two motors.

Radio fans attention: The FCC has been requested to establish a new "feeder" type of temporary amateur license requiring a less stringent examination than regular amateur licenses and with a lowered code speed requirement of 7 words per minute. This license would be issued for a one year term and would be non-renewable.

We hope this regulation is "put through."

We believe many modelers will be interested in the new issue of *Aerosphere*, which contains complete information on all types of modern aircraft and engines, as well as directories of aircraft manufacturers, publications and other valuable information.



JOE OTT *America's* Ace Model Airplane Designer *Announces*



36" SUN SPOT
SUNSPOT. National Contest Endurance Flyer. 36 inch. Free-wheeling propeller. Full size, 3 view plan.....50 cents

NEW WORLD-BEATING BATTLE PLANES AND GAS MODEL KITS!

Get these famous Ott-designed model flying kits at your dealer's and ask him to show you the entire Ott line. If you order from Ott direct, include 10 cents extra for postage on battle planes and 15 cents on gas models. Catalog 5c.

FAMOUS BATTLE PLANES YOU HAVE BEEN WAITING FOR!



These famous battle planes in complete Ott-designed kits.....\$1.00 each

VALUE BEYOND COMPARISON IN THESE OTT GAS MODELS



OTT 72" STREAMLINER
(Above) 72 inch. \$3.00

SKYLARK,
(Right) 48 inch. \$1.00

KINGFISHER,
72 inch. \$5.00

TURNER RACER,
50 inch. (Top Right Hand) Exact Scale Model. \$2.50

GAS KING, Jr.
48 inch. \$2.50

HOWARD,
D.G.A.-11,
50 inch \$2.50



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HUGE IDEAL HOBBY CATALOG - 10c

proven SUPERIOR
—by thousands of hours
IN THE AIR!

Class "A" Gas Job

Wingspan 36"

Famous Prize Model

Powered by

MIGHTY ATOM

"MOLECULE"

IN THE NEWS!

Ideal's U. S. Destroyer "Preston"

featuring **CARVED WOOD HULL**

SUPER DETAIL KIT makes perfect building easy!

See Our
Complete
Operating
"HO" LAYOUT

Judged the most magnificent in America
for its size! Our mini-railroad expert
is always in attendance. Come in—
bring your problems with you!
COMPLETE STOCKS OF ALL
POPULAR HO R.R. EQUIPMENT.

VISIT
Ideal's
HOBBY
CENTER

Ideal
MODELS

Overall
25"

\$1.95

LESS
MOTOR

By Mail 20c Extra



[Dealers: Write today for prices]

Air Youth of America

(Continued from page 33)

Lines, through whose generosity the scholarship has been made available, will make a grant of fifty dollars a month to cover room and board expenses while Don is at the school. His transportation from St. Paul to California will be arranged by United Air Lines.

Herman Eley's experience in volunteer work as an aircraft spotter with the Air Corps is typical of the way expert model builders are proving their usefulness in the national aviation program. Captain A. E. Key, of the 153rd Observation Squadron, says of Herman: "By his skill in flying model planes, he has demonstrated a marked degree of knowledge of airplanes and the characteristics of flight."

Herman last year qualified for flight training under the CPTP program (non-college section), but because there was no school operating within two hundred miles of his town he never got the training. Like Don, he has helped to pay the costs of his education by helping out around the local airport.

Ben Chalmers has been building model planes for nine years, and has developed an original device for controlling the model's flight. Ben graduated this June from the Springfield Technical High School where he made a good scholastic record. Like the other winners, he has worked at the local airport. Ben made an especially attractive presentation of his record in a booklet which contained a number of excellent drawings of original

designs for planes.

Training for each winner will begin with the fall sessions of the schools at which they will be enrolled.

The Air Youth scholarship competition has been described as the first of a long range educational program by which Air Youth hopes to make the best aviation training available to qualified youth who would otherwise be unable to advance their aeronautical education.

The East Gets Together

(Continued from page 25)

gave little trouble, until the end of the day, when they became excited over the many unique ships entered in the Stunt Event.

In many respects flying followed the same pattern as in other contests: Louis Garami lost his plane, model builders launched planes by "shoving" them (incidentally causing them to stall), there was the usual number of crackups, and the Simmons boys won the majority of prizes. Apparently these lads have "ganged up" on the rest of the model builders, and being clever and efficient, they find it not too difficult to carry off a great deal of the "hardware".

There was a profusion of different designs. Apparently modelers are thinking in more original terms than last year; now they are not satisfied in building the standard parasol planes, although many of this type took the air. One of the most unusual ships was a canard designed and built by Stewart Brown; shown in one of the accompanying pictures. Another plane had a large gap in the wing, at the center over

the fuselage, end plates being used at the center as well as at the tips. Actually there were two airfoil surfaces, right and left. Although this was interesting we fear the center gap destroyed wing efficiency, giving the effect of two separate wings of lowered aspect ratio. Louis Garami was bothered by what he thought was a bee buzzing around his head, when suddenly he realized it was merely the smallest ship at the contest; a 27" Atom-powered plane built by Ralph Jackson. One large air-wheel gave the impression of a huge doughnut attached to the nose of the plane.

Among the "trick gadgets" was an excellent retractable single wheel landing gear by Mac Jurist. It was operated by a clock spring, retracting after the plane took flight. The ship embodying the most gadgets belonged to Armand Valesquez; shown in one of the photos. It had landing flaps, a bomb which was automatically released, movable ailerons, elevator and rudder. It was entered in the Pre-Determined Flight or Stunt Event and placed second. We believe it would have been first if it had not flown so far from the field, making it impossible to know whether or not the flaps, bomb and other gadgets operated as intended. The ship made a beautiful flight; was thrown into a power dive by the automatic device, recovered, then spiralled tightly, dropped its bomb and finally landed with the flaps depressed. The flaps were depressed when it was retrieved, otherwise one was unable to determine if they were down as it was about half a mile away. Howard Simmons won this particular event. His ship remained within a reasonable distance of the starting point, made two tight spins one after another, recovered as pre-determined and finally made a normal landing. Another ship in this event dropped a parachute.

In Class A. F. Antosh placed first with an average time of 9:33. Class B was won by William Emmons with an average time of 9:32. Winner in Class C was Pat Viola, average time of 9:43 1/2.

The contest was one of the smoothest run affairs ever staged and everybody was extremely happy about it. One of the outstanding features was Carroll Moon's announcement over the loud-speaker system; he kept up a continuous flow of interesting comments throughout the whole day, except for a few minutes during the luncheon period. Registration was worked out efficiently and required little time, as was the determining of official winners. Approximately 1000 cars attended, crowding the parking lot. One of the largest groups of prizes, cups, motors and kits, ever given at a contest was won by fortunate contestants: The trophies were beautiful beyond description.

Great credit is due the Kresge Aero Club for its part in the contest's organization and operation, under the direction of Messrs. Charles F. Hart and Leon Shulman. MODEL AIRPLANE NEWS was represented by Mr. Charles Grant, who served as co-director. Contestants came from many states along the eastern seaboard; one group from as far as Nashua, N.H. There were exactly 225 entries.

Following is a complete list of winners:

Pre-Determined Flight

1. Howard Simmons, Mountain Avenue,

HOBBIES *that make America First!*



The tremendous upheaval in the world today points definitely to one thing . . . America must and will dominate the air! For years to come, aviation will be a foremost industry, and the men who will control it are the young men and boys who are building and flying model airplanes today. Many of today's aviation leaders started as model builders, and hundreds more are at work in the drafting rooms and experimental

laboratories of the big aircraft plants. Model airplanes are the gateway to aviation, and Megow Models bring you the very latest developments.

Megow now announces a whole new series of the world's latest fighting planes . . . six big flying models with 30-inch wing span at 50c each! Every kit is truly a Megow product, with all the superior quality and completeness that make Megow kits so different.

Six New Rubber-Powered Warplanes



SPITFIRE

J18. SPITFIRE—Famous fighter of the R.A.F. A sleek, easy-to-build, rubber-powered model and a graceful flier. Full-size plans, superior materials, 30-inch wing span. . . . 50c

J19. REPUBLIC GUARDSMAN—Originally known as the Seversky fighter, it became famous, and continues among today's finest. Modelled remarkably accurate to scale and designed to fly! Like original except for bomb racks and load. 30-inch wing span 50c

J20. BLACKBURN "SKUA"—A famous fighter carried on British Aircraft Carriers that has seen extensive service with the British fleet in sea operations. Add it to your series of famous war planes. 30-inch wing span. 50c

J21. DOUGLAS 8A5—Widely known American Attack Bomber built by Douglas. Attack bombers play an important part in modern warfare, largely supplanting long range artillery in bombardment. 30-inch wing span. 50c

J22. VOUGHT-SIKORSKY XF4U-1—A shipboard fighting plane with inverted gull-wing for lower center of gravity, better wing-to-fuselage streamlining and carrier-deck landing. 30-inch wing span 50c

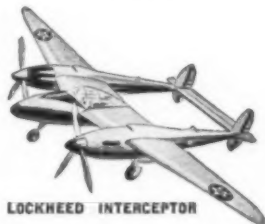
J23. LOCKHEED INTERCEPTOR—Called "Lightning" by the British, the 2,200 H.P. original of this model is about to make history in warfare. A most novel design. 30-inch wing span. . . . 50c



REPUBLIC GUARDSMAN



DOUGLAS 8A5



LOCKHEED INTERCEPTOR



BLACKBURN "SKUA"



VOUGHT-SIKORSKY XF4U-1

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See your dealer, or order direct if he cannot supply you. Send 10c today for the big, new 132-page No. 11 catalog, just out!

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217 North Desplaines St., CHICAGO • 718 Mission St., SAN FRANCISCO

Queen Anne Novelty Co., Bogota, N. J.; Brooklyn Novelty Co., Brooklyn, N. Y.; Hobbycraft Model Supply Co., 2918 Gr. River Ave., Detroit, Mich.; Mod Kraft Co., New Orleans, La.; Canadian Hobbycraft, Toronto, Ont.; J. Morales, O'Reilly 460, Havana, Cuba.



The Advanced VANGUARD '66' Picks up the Gauntlet..

This new Advanced creation, winner of many contests, designed by John Drobshoff, accepts the Advanced CHALLENGER's takes an Advanced model to model.

It has won many and is a worthy mem-



This new ship is a result of two years development of a 66 inch wingspan gas model suitable for motors ranging in size from .35 to .49 cu. in. displacement such as all Bunch motors. (Ideal for the Bunch Tiger), Comet 35, Little Dynamite, Cannon 358, O.K. Motors, etc.

COMPLETE KIT Only \$4.95 (Add 25c for postage and packing)

ADVANCED CHALLENGER

Class "A"—50" Wingspan

Suitable for Class A and small Class B motors.



The Advanced CHALLENGER is winning so many contests that space compels us to discontinue listing its winnings. We still say it is the champion of Class "A" gas models and one of the champions in any class. This beauty costs \$2.50.

ber of the Advanced Flying Fleet.

This kit contains our superb Advanced Green End Balsa, new light weight Bamboo covering, streamlined rubber wheel and a new Advanced Engineering Feature:

A FREE DETACHABLE NOSE COWL—easy on crankshafts and props.

This kit contains only the highest quality materials and highly detailed plans.

ADVANCED EXPLORER



50" Wingspan—\$2.95

For .23 Class "B" and large Class "A" Motors.

A sturdy, beautiful and reliable model. AN ADVANCED MODEL CAN MAKE YOU A CHAMPION.

ADVANCED ENGINEERING CO.

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FRESNO, CALIFORNIA

Middlesex, N.J. Won Breeze Corp. Trophy, Air Trip, Airline Trophy.

2. Armond Valesquez, 1337 Brook Ave., N.Y. City. Won Polk Trophy.

3. Clifford Simmons, Middlesex. Won American Airline Trophy.

Class A

1. F. Antosh, 1042 Willow St., Scranton, Pa. Time 9:33. Won Casey Jones Trophy, Bantam, Air Trip, MODEL AIRPLANE NEWS subscription.

2. Vernon Jensen, 315 Smith St., Perth Amboy, N.J. Time 7:51. Won Microdyne Trophy, MODEL AIRPLANE NEWS and Air Trails subscriptions.

3. Eugene Bischoff, 75 Yantecow Ave., Bloomfield, N.J. Time 7:10. Won Sunday Call Trophy, MODEL AIRPLANE NEWS and Air Trails subscriptions.

4. Andrew Stavast, 42 Gillispie Rd., Bloomfield. Time 6:35. Won Wright book ends, MODEL AIRPLANE NEWS subscription.

5. Louis Garami, 3705 64 St., Woodside, N.Y. Time 6:20. Won Kresge Trophy.

6. Walter Kabana, Perth Amboy, RFD No. 1. Time 6:07. Won Air Line Trophy.

Class B

1. William Emmons, Eatontown, N.J. Time 9:32. Won Berkeley Trophy, Forster 29, Air Trip, MODEL AIRPLANE NEWS subscription.

2. Basil Giessen, 3140 76 St., Jackson Heights, N.Y. Time 8:35. Won Queen Anne Perpetual and Kresge Aero Club Trophies, MODEL AIRPLANE NEWS and Air

Trail subscriptions.

3. Fred Gross, 513 Lexington Ave., Cranford, N.J. Time 7:45. Won Bay Ridge Trophy, Flying Aces and Air Trails subscriptions.

4. Raymond Simmons, Middlesex. Time 7:32.7. Won Flying Aces Trophy, Flying Aces and Air Trails subscriptions.

5. Alvin Larsen, 59 Grove Ave., Metuchen, N.J. Time 6:52. Won Kresge Aero Club Trophy, MODEL AIRPLANE NEWS subscription.

6. Jack Sellers, 843 Gibbons Ct., Elizabeth. Time 5:48. Won American Airline Trophy.

Class C

1. Pat Viola, 1512 Mifflin St., Philadelphia. Time 9:43.5. Won Scientific Trophy, Ohlsson 60, Air Trip, MODEL AIRPLANE NEWS subscription.

2. R. J. Modersohn Jr., 43 Menzel Ave., Maplewood, N.J. Time 9:02. Won Comet Trophy, MODEL AIRPLANE NEWS and Air Trails subscriptions.

3. Coleman Barney Jr., 34 Hornsby St., Fords, N.J. Time 8:13. Won Polk Trophy, MODEL AIRPLANE NEWS and Air Trails subscriptions.

4. Howard Simmons, Time 7:37.5. Won Junior Motors Trophy, MODEL AIRPLANE NEWS and Air Trails subscriptions.

5. John Diehl, 80 Williams Ave., Jersey City. Time 7:32. Won Aero Coil and Trophy.

6. Arthur J. Gray, Bound Brook, R.F.D. No. 1, Greenbrook Twp., N.J. Time 7:22.

Won Airline Cup.

Worst Crack-Up

George A. Morris, 115 Magee Ave., Roselle Park, N.J. The ship's remains were buried with due ceremony.

Why Not Club Contests?

(Continued from page 27)

Harry Bennett of Denver and Russell Webber of Chicago. Denver and Chicago gas model clubs would turn out at local contests held simultaneously, and by means of a point system the best club won the trophy for that "round."

Of course, the chronic grouches will start murmuring about changes in atmospheric conditions and different sizes of flying fields and indoor halls—but we say to you that despite such differences "telegraph" meets can be plenty of fun and provide some very interesting experiments.

So why not form a club team for challenge competition? And if your group is a strong indoor "threat," we suggest you get after that guy Andrews. Who does he think the P.M.A.A. is—etc!

Model Designing Simplified

(Continued from page 23)

ner, the wire is bent into a loop, then bent back parallel with the shaft and forced into the wood of the spinner. The three-view drawing should indicate the shape and method of assembly of this part.

The rear motor hook must be anchored to the cross piece cemented to the back of bulkhead 7; therefore it should pass back through the bulkhead, then loop around this cross piece, as indicated. The tail skid will be fastened to the front of bulkhead 7; the upper end being bent backward and forced into the bulkhead. Where it protrudes from the body it bends backward along the under side of the fuselage, then bends downward to form the skid.

The landing gear is to be the single strut type. This is to be cemented to the nose block bottom and in order to keep it from rotating must have a loop running forward perpendicular to the part passing laterally across under the fuselage. This will be held in place by thread wound around the gear on either side of the fuselage, passing up the side and over the top. The problem here is to provide a rigid fastening so the landing gear will not rotate or be displaced; this makes necessary the shape indicated in the three-view drawing.

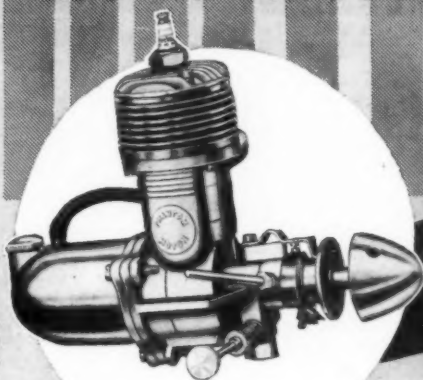
The end of each strut should be bent downward and then outward at a 90-degree right angle, to form the wheel axles. The ends of the axles will be bent up after the wheels are in place.

After including all parts details in the sideview assembly drawing, the next step is to lay out the patterns of each part, in full size. These will include: 1. Body, sides, top and bottom, and should be drawn as shown in the accompanying plans. 2. The bulkheads, showing details of each one. 3. Nose plug. 4. Bearing plug. 5. Bearing. 6. Propeller shaft. 7. Tail moment hook. 8. Tail skid. 9. Landing gear. 10. Propeller blank. 11. Blade pattern. These will be necessary in order to make each individual

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BULLET SPECIFICATIONS

1/7 h.p.; 2 cycle rotary valve; 3/4" bore; 3/8" stroke; .275 cu. in. displacement; bare weight 4 1/2 oz. Gravity feed carburetion; Diamond bored crankcase; hardened steel timing cam; solid steel case hardened crankshaft; die cast Magnesium connecting rod; lapped alloy steel piston; fully equipped heavy duty radial mounting.

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A thousand thrills await you with the new official record holding Phantom Torpedo and Bullet. You won't believe your eyes when you see their streamlined beauty, or your ears when you hear the drone of their power packed engines. You will say it isn't possible to sell such fine engines for so little. But it is. That's because Phantom engines are sold direct from factory to you...No in-between profits, you save the difference.

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NEW VALVE PRINCIPLE AND IMPROVED CRANKSHAFT IM-PROVES PERFORMANCE

Undreamed of performance by use of new SQUARE VALVE increases engine performance as much as 15 to 20%. Square valve stays open longer than old round type. Lets more gas into gas chamber, thereby developing more power.

(Torpedo only).



TORPEDO SPECIFICATIONS

1/7 h.p. @ 14,000 r.p.m.; 2 port 2 cycle type; bore .725; stroke .724; static thrust 30 to 32 oz. plus; displacement .2909 cu. in.; weight 4 1/4 oz.; downdraft carburetion; plus size Magnesium gas tank; Champion V-2 spark plug, exclusive offset principle... easier starting, more power; metal enclosed condensers; additional crankcase fins; Diamond bored crankcase; oversize anti-friction bronze bearings; lapped alloy steel piston; die cast Magnesium connecting rod; special new type heavy duty radial mounting.

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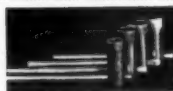
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Just the thing for your new class A job. Weighs only $\frac{3}{8}$ oz. It is identical to the standard model except that the length has been reduced to $1\frac{1}{2}$ ". It is extremely accurate for motor runs up to 1 minute.

PRICE \$1.25

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SPARK PLUG WRENCHES 20c

Eliminates the danger of breaking the porcelain when replacing plugs. Four sizes: large for V-1, medium for Brown, Hurler and Blue Crown; Small for V-2, and extra small for V-3

Each 20c



A-C FUEL PUMP CAN

Keeps dirt out of fuel and makes refueling easy. Holds plenty of gas for a complete day's flying yet is small enough to fit in your tool kit. Guaranteed leak-proof. Pump with $\frac{1}{2}$ pint can. Price..... 60c



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Transparent Gas Tank
Modernize your old engine. This tank has a top of heavy, fireproof celluloid sealed to prevent leakage. A Duprene fuel line makes it easy to attach to your needle valve.

Cap. 1 oz. Wt. $\frac{3}{8}$ oz. 1 $\frac{3}{4}$ dia. 75c ONLY

NEW FREE CATALOGUE JUST OUT

Contains pages chock full of the latest gas model supplies, accessories, kits and motors. Send for yours today.

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Name

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City State M-8

officials went over the procedure of having our models "processed" and applying for official flights, so we shouldn't have any trouble this morning getting in our flights. Incidentally, we were certainly glad we went to that session because we had an opportunity to see, among others, Frank Zaic, our ex-man-about-Europe, Bob Sommers of the Stix, Baer & Fuller Model-builders' Club, St. Louis, and, of course, Irwin and Nat Polk, who have played important parts in the direction of past national meets.

That was Dave Call and Erv Leshner of Philadelphia you saw just now, both with some nice looking Class "C" indoor stick models; and behind you in the balcony you can see the boys from Boston, all members of the Junior Aviation League, out here with J.A.L. director Gunnar Munnick. The Boston lads are always a serious threat in the indoor events and do well for themselves in the outdoor fray. Before 964 Chambers of Commerce leap on us, we hasten to say that representatives from other cities also do well here. So there!

Tonight, back at the Sherman, we're scheduled to see movies in the Ball Room which will precede the meetings of various technical committees of the Academy of Model Aeronautics. The radio control event entrants are also getting together at the same time to iron out their regulations and get all set up for a whiz-bang contest of their own...

Of course on July 3rd nobody forgets this: "Dear mother and dad—am having wonderful time, wish you could see me getting into this bus with my rubber-powered cabin toy and my two Class A gas models..." The folks would certainly get a good laugh at our difficulties, but never mind, some fellow contestants always lend a hand and get you and all your materials safely stowed away. And,

incidentally, the top-place men in today's rubber powered cabin event constitute the American Moffett team meeting all comers on Saturday.

You note this outdoor site is approximately 8 miles south and 5 miles west of the Sherman, and contains about a quarter square mile of cleared land. Best of all, you can see that the surrounding land is unfenced, and that adds up to a fine flying site and one from which numerous national records have been established. Visibility is excellent, and probably we will see some Chicago Area Radio Council autos out here again this year to aid in retrieving far-flying models that outdistance their owners.

Just saw George Sass, Jr., of Detroit—you know, last year's national champion. Also, Steve Corbett, A.M.A. state contest director for Michigan and leader of the Detroit forces, just went by. He's the jolly gent with the sunburned dome. That streak of lightning that sped past was Charlie Grant, editor of MODEL AIRPLANE NEWS, on the trail of more winning designs for his magazine. He murmured something in passing that sounded like: "For the best report of the meet and the most pictures see forthcoming issues of M.A.N."

Incidentally, we'll let you in on a good stunt and one devised by Dick Everett of Langley Field, Va. Between flights have your helper stand in the line of contestants waiting for official flights and to have their models checked. Your assistant can hold a place for you and save you precious time which can be spent in checking and adjusting your craft.

Notice some of the more experienced contestants, the old-timers, and former National meet entrants. They keep an eye on the weather and watch the clouds to determine when flying conditions are at their best. When these old-timers prepare to make an official flight you can be reasonably sure that flying conditions are nearly perfect.

RADIO CONTROL

Simplified

by the use of our new self-neutralizing rubber powered escapement. One signal gives right—two gives left—comes back to neutral whenever you want. A worthy addition to our complete line of radio control equipment. Be sure to specify No. 122 Escapement. Ask your dealer or send ten cents for Illustrated Instruction Manual which describes other equipment manufactured by us, and elements of radio control.

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No. 400 SPITFIRE II

Hawk presents these new WIND TUNNEL model kits to the scale model builder who wants to build models of quality.

Kits are complete in every detail and are 1/2" scale solid wood; same as used for building WIND TUNNEL MODELS.

Special features of these new kits, in addition to having all the wood parts cut to outline shape, are as follows

- Cast Propeller
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KITS NOW AVAILABLE

No. 400 Spitfire II \$2.50

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Postage 15c on individual orders for each kit ordered.

DEALERS:—Write for circular on your letter head.

Price list sent to individuals for 3c stamp.

HAWK MODEL CO.

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SEE PAGE 41



The MARVIN CLASS A Superior Performance

—due to the high compression resulting from the extreme accuracy of its manufacture.

High Compression Means Easy Starting

Using the same materials as used in fine automobiles, the Marvin Class A Engine is a marvel of precision manufacture. Its cast iron cylinders are diamond bored and honed to .0001 running clearance. Each piston is accurately ground and individually lapped. It has oilite main bearings, counterbalanced crankshaft, plastic tank. The Marvin is painstakingly made by men who insist on the finest materials and careful, accurate workmanship. Its superior performance, long life and ease of starting, plus the fact that it can be inverted have won the enthusiastic approval of hundreds of owners from coast to coast.

Guaranteed

Each Marvin carries our guarantee, protecting you against all defects in materials and workmanship.

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ORDER TODAY

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Complete with coil and condenser, assembled and tested. Prepaid where full payment is received. Shipped C.O.D. plus postage on receipt of \$1.00 deposit.

Here's a chap we'd like you to meet—Irwin Ohlsson. His concern is plenty busy these days with national defense orders, a tribute to the workmanship and engineering that go into most model airplane engines.

This is the big evening for all at River-view Park amusement center, at Western and Belmont Avenues, not far from Chicago's loop area. Before we pull out though let's see the radio control models on display in the Exhibition hall of the Sherman. Here's a chance to see all the radio models together—impossible on the flying field.

You may scoff at the idea of spending an evening in an amusement park during a National meet. But, brother, did you ever see Carl Goldberg in a trainer plane? We have, and it was plenty funny. Everything is free, too—on the house, so to speak—so you won't want to miss any of that.

* *

This is Friday, July 4th, and since the weather is fair, you can expect a record turnout at the model airport to see rubber powered stick models and Class B gas jobs. 100,000 spectators are expected here by tomorrow afternoon, but a good crowd will be on hand this holiday. As soon as our flying is over we want to hurry back to the Sherman on the first bus so as not to miss the judging of the best finish event and the official inspection given the flying scale models. Afterwards, we'll want to sit in on the Academy contest board meeting called for this evening in the Ball Room. If you have any ideas on what the '42 rules should look like, now is the time to stand up and spout. Better have your proposals in typewritten form, too, so that you can hand in to the Board for consideration any and all theories you harbor anent regulations—past, present and future. . . .

* *

Saturday, the 5th, is the last day of the biggest of all model meets—and it is only fitting that the big Class "C" gas models should compete. Flying scale models, radio control craft, and the International Moffett finals wind up the competition in a blaze of activity. About 8 p.m. we are sitting down to the most important "feed" in any aeromodeler's life—the National Meet victory dinner. Afterwards we shall witness the presentation of the many outstanding awards, the crowning of the national champion and the announcement and presentation of the Fred W. Megow trophy to the Academy chapter whose members made the best showing in the competition. . . .

* *

Sunday morning sees the packing of models and parts, some slightly the worse for wear. Whatever the individual case, win or lose, each modeler is happy in the thought that his was the privilege of participating in the biggest model competition in history, conducted in the standard democratic manner so dear to all American youth.

Already you hear plans being discussed for participating in next year's Nationals. As for us, please excuse this ancient hulk whilst we drag it to the Academy of Model Aeronautics meeting being held this Sunday morning in the Ball Room—the scene of last evening's banquet.

It is with considerable regret that we leave you, but at least we are now acquaint-

ed and can correspond until next year's big competition. We were mighty glad to have had you with us for the meet and will be mighty proud to have your name appear in the national contest winners' columns in MODEL AIRPLANE NEWS next issue. Happy landings.

Air Line Giant

(Continued from page 27)

Model 20 has TWO engines developing a total of 4,000 horsepower, a wingspan of 108 feet, a length of 75 feet, a gross weight of 38,000 pounds and a top speed of 243 miles per hour. Breath-taking? Well, you figure it out and send me your explanation of this comparison between two ships with identical dimensions and specifications, one a giant of four motors, the other with only two motors.

The result of this study will bring out the chief advantage of the Model 20: economy in operation, profit for the airline operator. And that's what builds airlines and thus builds America. Here, then, is the backbone of aviation all wrapped up in an outstanding airplane and no one has purchased it!

Why? Hard-luck and tough breaks have dogged the Model 20 since its inception. Two years ago the airlines were caught short and needed new equipment badly. The Model 20 wasn't ready and Douglas' DC-3 got the call. Then the mighty Twenty was completed just as Hitler walked into Austria and the talk turned to building our air forces. The St. Louis Airplane Division of Curtiss-Wright Corporation under the able direction of designing and production genius George A. Page, the divisions Chief Engineer was all tooled and ready to build when the Office of Production Management started to squeeze-play the airlines and warplane orders were given through-tickets on the production line.

Still confident, George Page stuck to his guns and redesigned the twin-rudder tail of his pride into a single vertical surface and further improved the Twenty. The new model was put through its paces by veteran test-pilot Eddie Allen and assistant Dean Smith (No. 1 American Airline pilot) and pronounced okay. But still no orders, which brings us up to date. Now, the OPM is relaxing a bit and permitting an airliner or two to get into the bustling production line of the Lockheed and Douglas companies. The airlines have won a minor victory in their skirmish with the Washington men and are now being allowed to place orders for equipment. And thus does the Model 20 come once again into the limelight. So let's hold it there a few minutes for a good look.

The Curtiss-Wright Model 20 is the world's largest twin-engine transport and is entirely conventional in layout following the established practice of low-wing all-metal cantilever construction with the engines mounted in streamline nacelles out-board of the fuselage.

The fuselage is of monocoque construction throughout and features an advanced form of design in which the cross-section is composed of two partial rings meeting at a tension diaphragm (cross-member) which serves as the floor of the cabin. The upper monocoque, being circular,

provides the maximum amount of cabin space and strength. Designed for sub-satrosphere work, the upper monocoque is stressed for a pressure differential of 5 pounds per square inch. The lower monocoque serves as a baggage and storage space compartment running the entire length of the lower fuselage structure. These frames are spaced at 15-inch intervals and are of extruded "U" shaped channel sections. These are connected with conventional bulb angle stringers and the entire frame-work covered with 24STAL "Alclad" aluminum coated aluminum alloy sheet flush-riveted throughout.

The nose of the Model 20 is extremely smooth and the entire pilot and control compartment windows lying flush with the contour of the nose. The rear portion of the fuselage has a full taper to a point at the tail cone, the tail surfaces meeting at the vertical and horizontal high-points of the contour for maximum air reaction.

The wing is built in three sections, a center-section and two outer panels with removable wing tips. The center section is built integral with the fuselage and passes through the fuselage below the cabin floor offering no obstruction to passenger and crew passage-way fore and aft. The wing is of two-spar design, being built up on a structure of a main shear web with cap strips and a secondary shear web to support flaps and ailerons. The center section is made up of truss-type ribs while the outer panel ribs are of stamped sheet with flange angles for riveting.

The leading edges are removable through the use of attaching counter-sunk screws. The tips are the up-swept design aiding greatly in lateral stability. The ailerons are all-metal construction and fabric covered. The trimming tabs are hydraulically operated from the cockpit. Trailing edge flaps run the entire length of the wing between the ailerons and are hydraulically operated.

The tail surfaces are full cantilever and are of all-metal construction. The vertical stabilizer is faired neatly into the fuselage upper back. The rudder is the straight hinge-line type with a small balance portion located at the top hinge which provides static and dynamic balance. A hydraulically operated trimming tab is located at the rudder bottom portion. The horizontal stabilizers are straight, replacing the 6° dihedral design formerly used. The elevators are all-metal construction and are fabric covered to simplify balance. Hydraulically operated trimming tabs are provided. The horizontal tail surfaces are of symmetrical airfoil section and are thus interchangeable left with right.

A conventional landing gear of the fully retractable type is provided. Long-travel oleos are installed throughout to ease landing for the passengers. The main landing gear consists of double air-oil hydraulic shock struts mounted in pairs on each wheel. The landing gear struts break and fold rearward raising the wheel into the nacelle. The opening is closed by large hydraulically operated doors which seal upon retraction. Operation of retraction and extension is by hydraulic accumulator with an auxiliary electrically operated system and a further emergency hand-operated manual system. The tail wheel operates in unison with the



Boy oh Boy!!! NOW SHE'S REALLY "HOT"

IT CERTAINLY PAYS TO USE BURGESS MODEL IGNITION BATTERIES

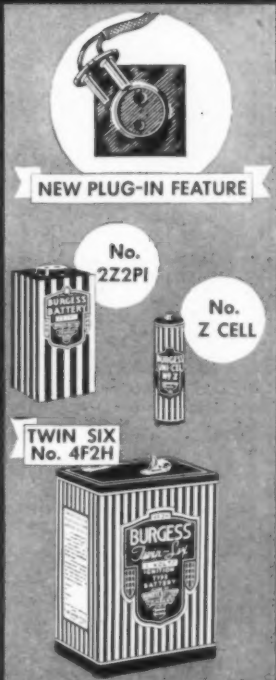
When you say BURGESS to your dealer, you're asking for batteries that are specifically made for the job you want done . . . for instance . . .

FOR BOOSTER WORK: The BURGESS Twin Six No. 4F2H will outlast two No. 6 doorbell cells and give you more sustained working voltage because it has 12% more zinc surface . . . yet weighs 40% less. Price75c (West of the Rockies—86c)

FOR CLASS "C" AND "B" JOBS: The BURGESS No. 2Z2PI with plug-in contacts is made of four special pen light cells in series parallel. All internal contacts both electrically and mechanically secure to resist shock and vibration. Maximum voltage and life for 2 3/4 ounces of battery. Price50c

FOR CLASS "A" JOBS: BURGESS No. Z cell is the absolute minimum in weight (1/2 ounce) for the amount of voltage and life. One piece zinc shell and special BURGESS electrolyte assure more distant end-point. Don't waste flying time by flipping a prop. Demand BURGESS from your Model Shop for really "Hot" motor performance. Price . . . 5c

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NEW PLUG-IN FEATURE

No. 2Z2PI

No. Z CELL

TWIN SIX No. 4F2H

main landing gear and in the same manner. When retracted the lower surface of the fuselage is sealed off from the slipstream by tight-closing metal doors.

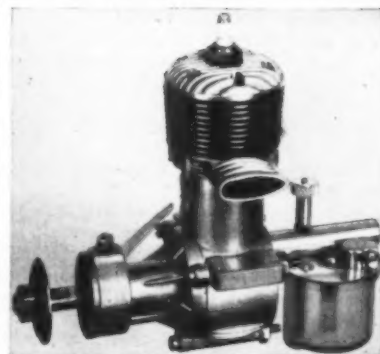
Power is supplied by two double-row eighteen-cylinder "Duplex-Cyclone" radial air-cooled engines developing 2,000 horsepower each for take-off and having 1650 horsepower each available for cruising power at 2250 r.p.m.

These drive Curtiss electrically controlled full-feather three-bladed all-metal propellers of constant-speed design. Carburetor air is taken in from an intake duct located atop each engine nacelle and routed rearward through an exposed tunnel to the down-draft carburetors located on the rear of each engine. Exhaust gases are routed around the engine cylinders and down out the nacelles through a single large controlled duct below. A large hydraulically operated scoop is mounted at the terminating end of each exhaust stack.

The oil tank is located in each engine nacelle and has a capacity of 40 gallons each giving the Model Twenty a total oil capacity of 80 U. S. gallons. These oil reservoirs are equipped with quick warm-up compartments to simplify cold-morning starts and high altitude engine operation.

Fuel is carried in four riveted wing tanks with a total capacity of 1,000 gallons of 86 octane fuel. For protection of passengers in the event of fire there is no fuel carried in the center section, the four fuel tanks being mounted in pairs in each outer wing panel. In addition, provisions have been made to carry an additional 400 gallons in

FORSTER "29"



B class, — 1/8 H. P. \$16.75 complete

At first sight, the new FORSTER "29" appeals to you with its clean cut appearance and modern design. Yet it is the unseen internal excellence of engineering, materials and unmatched precision that make it the Quality Motor it is.

Admire its streamlined beauty, its sturdiness, but when you buy it, do so because of its Speed, its Power and dependable character. You can expect more from a Forster motor because we've built more into it.

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Ask for folder "B".

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9-FOOT 1941 TAYLORCRAFT GAS MODEL



9 Foot Span. Length 66". 3" scale

MODEL 1/4 SIZE OF REAL PLANE. CAN USE RADIO CONTROL.

One of the easiest gas models to build. Has special wing airfoil for slow landings. Set has ready cut wing ribs, gear struts, nose piece, etc., set of paints, dope, glue, etc. Model weighs 3 3/4 lbs. without motor, suitable for radio control. Lifts 4 lbs. additional weight. **\$15.00**
Full size scale drawing. Const. set, postpaid, less wheels and motor.....



36" TAYLORCRAFT MODEL

with floats on. This new combination model offers many flying thrills on land or water. Set, postpaid.....**\$1.50**

NORTHROP A-17 ARMY FIGHTER



24" Span. Length 17". 1/4" Scale

Set has 7" prop, turned motor front, wooden wheels and complete set of paints. Postpaid.....**\$2.50**

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**MINIATURE AIRCRAFT CORP. 83 LOW TERRACE
STATEN ISLAND, N. Y.**

emergency tanks which are also installed in the outer wing panels. This tremendous tankage is provided to give the Model Twenty the tremendous range required for overwater operation of which it is capable.

The fuselage is designed to be hermetically sealed, supercharged and pressure-regulated in such a manner that at an altitude of 20,000 feet (sub-stratosphere) the equivalent barometric pressure is that of only 6,000 feet, comfortable free-air operating altitude for passengers.

The crew is made up of five with the pilot and co-pilot seated side-by-side in the extreme nose section of the fuselage. The radio operator and navigator is situated immediately behind them and is located in a surprisingly well equipped "office" complete with navigation table and chart space.

The fourth member of the crew is the chef while the fifth is the ever-present stewardess. The galley is located aft of the main cabin directly opposite the main entrance door on the left side of the fuselage. Provisions are made for storage of adequate provisions of equipment and food, storage cabinets, ice-box, gas stove and serving facilities. A retracting seat and work table for the stewardess is also provided in this section.

The luggage and cargo is stored below the main cabin deck as previously mentioned. The main cabin deck is composed, bow to stern of the following: pilot's compartment, men's washroom and toilet, main cabin with seats for 36 passengers, vestibule and galley, women's lounge and toilet and a wardrobe compartment.

In the cockpit the pilot's seats are ad-

justable for height and tilt and also for fore and aft positioning. The engine controls are all mounted on a central control pedestal located between the pilot and co-pilot to ease transfer of command of the ship. Duplicate flight controls and instruments are provided on each side of the pilots compartment. All instruments are of the tell-tale type which permits a single glance at the complete instrument layout to check for disturbances in the operation of the engines or plane. All electrical and radio switches are located in panels above the pilot and co-pilots head.

The second section of the fuselage contains the men's lounge and toilet facilities including provisions for the use of electric shavers. The stewardess' permanent quarters are located opposite this section including a seat and signal light system control.

The main cabin is 35 feet 4 inches long and 9 feet 9 inches high in the middle. The 36 passengers are accommodated in banks of two seats on the starboard side and a single row of seats on the port side. These seats on the right side fold down into beds and as a sleeper the Model Twenty will accommodate 20 passengers.

A new innovation in airliners is the wardrobe compartment located on the left side of the fuselage aft of the galley which provides a cloak room for passengers coats, sweaters and outer garments while in flight. The women's lounge, located just aft of the main cabin, includes a full-length mirror, dressing table and seat, wash basin, toilet and luminous tube lighting of the fluorescent type. It is daintily appointed throughout.

Beneath the main cabin floor is the storage section which is divided into four major sections. The luggage compartment is located under the cockpit, access to which is gained through the main loading door in the forward belly of the fuselage. The luggage compartment has a total capacity of 90 cubic feet and there is a hatch in the floor of the cockpit to permit access to luggage while in flight. Aft of this luggage compartment is the forward cargo hold with a total capacity of 160 cubic feet and is loaded through a large door located just forward of the wing leading edge. The main cargo hold with a capacity of 300 cubic feet is located between the wing trailing edge and the tail section and is accessible to the ground through a large door. Between the main cargo hold and the forward cargo hold is the accessory compartment which contains such items as the hydraulic, electric, de-icing, and fire-extinguishing equipment. All other accessories are centralized in this compartment for ease of maintenance and speedy diagnosis of trouble during stops.

Total cargo capacity including the luggage compartment is 550 cubic feet. The Model Twenty has a wing span of 108 feet and is 76 feet 4 inches in length. It stands 24 feet 8 inches high and has a total wing area, including ailerons, of 1,353 square feet.

The empty weight of the Model Twenty is 24,750 pounds for the standard 36 passenger transport. It has a useful load of 13,250 pounds which gives it a total gross loaded weight of 38,000 pounds. This last may be augmented by 400 pounds passenger weight, 2,400 pounds fuel weight and 1,200 accessory equipment weight, giving it a maximum safe flight weight of 42,000 pounds, twenty-one tons!

The Curtiss-Wright Model Twenty Transport has a full-load top speed of 243 miles per hour and cruises at 210 miles per hour. Top speed is attained at 13,000 feet while best cruising altitude is 7,000 feet. The best top speed at this latter altitude is 237 miles per hour. With flaps lowered the huge transport lands at 70 miles per hour. It can climb to 13,000 feet on only one engine! It has a service ceiling of 26,900 feet and a best operating altitude of 19,500 feet at which it operates as a pressure-sealed sub-stratosphere high speed transport. It has an initial rate of climb of 1,440 feet per minute.

There then is a quick picture of aviation's hard-luck giant, the Curtiss-Wright CW-20 Transport, the world's largest (by far) twin-engine airplane. We have seen that although its dimensions are identical with ships carrying twice its number of motors, it flies faster, farther and higher than its competitors in the next higher weight and specification class. But tough breaks have kept it out of the limelight. The CW-20 deserves the best break the airlines of America can give it and with the recent loosening-up of military aircraft production restrictions and particularly airline-buying ties, perhaps this giant will be very much in the limelight soon. We are looking forward to its success!

SEE PAGE 41

Flash News

(Continued from page 37)

hot" in the air, its terrific speed raising the temperature of the wing and fuselage skin as much as 20 degrees.

To speed production, two West Coast plants have actually installed conveyor belt assembly lines identical to those used in the automotive industry in Detroit. Both Vultee and Douglas plants are now using overhead traveling jigs which move fuselage and wing assemblies along and into place for final assembly. Stops are made at stated intervals at stations which provide needed sub-assemblies, complete even to the exact numbers of screws and bolts needed for assembling the parts.

Officially confirmed figures indicate that the United States Aircraft Industry produced 10,500 military airplanes during the twelve-month period preceding June 1st of this year. More than five billions dollars was spent and it is believed that at least twenty-five billions must be spent this year to attain the figure set by the Office of Production Management.

North American Aviation, the nation's number one airplane production plant which has, for short periods, produced one-fifth of the nation's military airplane output, has fallen victim of that insidious threat: the strike. More than three thousand workmen marched off their jobs and two thousand engineers, planners and executive department employees were forced to leave. Object of the strike is to set a minimum wage of 75c an hour for beginners and give everybody an immediate 10c-an-hour raise. When one thinks today that these kids are asking \$30.00 per week to START one wonders how we could have been so delighted with our first week's wages of \$13.50 when we started in aviation nine years ago!

We hesitate to write our next FLASH NEWS item but it must be borne in mind that we are offering it only for what it's worth and reserving our own personal opinion as you are welcome to do; but here it is: A high ranking U.S. Air Corps officer in the office of the Western Aircraft Procurement Office states confidentially that the Broddingnagian Douglas XB-19, the world's largest airplane, will not be flown—ever! It was built purely for experimental and test research and that everything of engineering and scientific value desired has already been obtained from the process of its design, construction and ground test. It will be dismantled and stored for future reference when the time comes that such giant airplanes will have a practical military value! It's only rumor, we repeat, and we're merely quoting it as something we heard with our own ears from an authority on the subject.

Another item of a confidential nature: Cunningham Aircraft has designed a super-speed fighting machine that so far outshadows present planes as to make them appear ridiculous. Formerly, a co-partner of the famed Cunningham-Hall firm, Cunningham has been offered a factory site by the city of Weston, New Jersey, and the Air Corps has complete wind tunnel test results already. If the design of the airplane proves practical from a production standpoint, this new arch-mystery ship will go immediately in mass production with the

Dependability Plus + + + the PACER

Real
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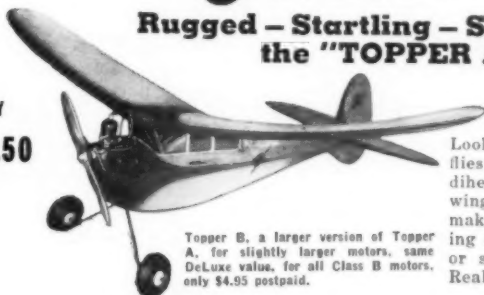
Kit contains full-size plans, Streamline wheels, silk, Silkspan, pre-cut parts, many extras. A DeLuxe value.



Over 1,000 flights by the original builder have worked out the "bugs" in this sensational ship. Consistent 3 minute flights with Torpedo, Forster 28 or other Class B motors. Span 53", plenty of area for best soaring performance. To pace the field—the Pacer's the ship for you.

Rugged — Startling — Sensational the "TOPPER A"

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Topper B, a larger version of Topper A, for slightly larger motors, same DeLuxe value, for all Class B motors, only \$4.95 postpaid.

Looks like a real plane, flies like a gull. Elliptical dihedral single-surface wing, for that flat time-making glide. An outstanding ship for large Class A or small Class B motors. Really "tops" in its class.

BAY RIDGE Model Airplane & Supply Co.

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Air Corps footing the bill.

Eight additional air observation squadrons of the National Guard has been ordered into active duty by President Roosevelt. The 121st of District of Columbia, the 122nd of Louisiana, the 123rd of Oregon, the 124th of Iowa, the 125th of Oklahoma, 126th of Wisconsin, the 127th of Kansas and the 128th of Georgia will now become full-fledged Army Air Corps Observation Squadrons. Each squadron has 116 enlisted men and 31 officers.

On the Q.T. fifty British youths are now in training at California Aero Academy, a division of Curtiss-Wright Technical Institute, receiving their primary flight training at the expense of the U.S. Army Air Corps using Air Corps facilities, equipment and training planes. After primary training, the students will be returned to Canada to be given advanced flight training and thence shipped to England for combat duty. Similar groups are passing through the school each five-week starting date and more than one thousand will be trained, according to the report.

The Army Air Corps is now permitting pilots and mechanics to resign from its ranks and enlist in the Chinese Air Force. The War Department will not divulge any details of the move other than it is designed to bolster the depleted ranks of the war-stricken nation with highly trained American combat pilots and experienced, skilled plane and engine mechanics. Chief advantage of such a move to the individual is an approximate 300% raise in wages!

"Timing" has been the secret of the

astounding success of the Nazi war machine and the United States is going to be ready when the time comes with just such a feature stressed and ready for service. Main element of timing is the cooperation between air and ground units. Low-flying planes have proved a success in directing mass troop movement by informing officers of congestions in the road up ahead, of stalled or broken down vehicles, of excessive passage of troops over confined spaces, etc. They are also able to advise commanding officers of road conditions ahead.

First flight of the B-24D, sub-stratosphere version of the mighty Consolidated B-24 four-motor bomber recently came off according to schedule and further test flights are now well under way. With greater horsepower and a pressure-sealed cabin, this new model is expected to operate at an altitude far above that of pursuing combat planes. At the controls was Chief Test Pilot William B. Wheatly who, four days later, was killed in the mysterious crash of a "Liberator" Royal Air Force version of the same plane. Sabotage was suspected by company officials who said they never saw an airplane behave as this one did on its take-off and short flight before its final dive into the waters of San Diego Bay.

NAVAL AVIATION: The U.S. Navy is now training its way to a goal of 15,000 pilots in a little more than two years. At the three big training bases of the Navy at Pensacola, Corpus Christi and Jacksonville, more than one thousand training planes are being flown eight hours a day to speed the training program at it moves into its sec-

CLASSIFIED DIRECTORY

Advertise in this directory for quick profitable results! Rates 10¢ per word including name and address. Minimum 20 words. REMITTANCES MUST ACCOMPANY ALL ADS FOR THIS DIRECTORY. Advertisements for September issue must be in by August 9.

MODELBUILDERS: We carry Megow, Cleveland, Selenite, Stenbacker, Berkeley, Modelcraft, Ideal and many other model kits. Send 3¢ for a price list. All-American Model Shop, 1112 W. Willow St., Stockton, Calif.

ALL TYPES of Gas Model Props: one, two and three blades in plain woods or laminated, also pushers. Entire price list sent on request. C. E. Smith, Box 3, Cap. Hill Station, Denver, Colorado.

SAVE 200% by constructing your own Balsa Cutter from clearly printed plans—enables you to cut sheet balsa in various strips 1/32 sq.—3/4 x 1" at 1200 an hour (accurately)—25¢, no stamps. (Free razor blade included). Orders must be in by 23rd—to be mailed on 28th. Miniature Science & Text Co., Aylmer, Ontario, Canada.

FREE kit with bicycle and model catalog 10¢. Glue or dope 25¢ 1/2 pint. Fairfax Model Supplies, 401 North 10, Kansas City, Kansas.

BROWN AERO RUBBER—Hodgman Rubber Company, 261 Fifth Avenue, New York City. Chicago Office: 421 South Wells St. Dealers and manufacturers only.

MOTORS, NEW AND USED. Parts, Repair Service. Highest allowance for old motor. Send your inquiry and save money. Hulser, 50 Tarriff St., Sayville, New York.

ATTENTION HOBBYIST! Get a free model plane with each motor purchased! Many other amazing bargains! Send 5¢ for catalog to WILSON MODEL AIRCRAFT CO., Box 14, Springfield, S. C.

ond phase. The flight training period has now been slashed from 12 months to only 7 to make way for new men. After completion of training the men are being inducted into active naval aviation squadron service, particularly in our insular possessions and the new patrol-bomber stations in Alaska.

Naval chiefs and their aides from 11 Latin-American republics are now touring the naval aviation establishments of the U.S. in an effort to study our advanced methods for possible native consumption and thus affect a closer cooperation in the defense of the Western Hemisphere.

One of the most thrilling mid-air rescues in Navy annals came off recently when Lieutenant Walter Osipoff dove out of the big Navy transport plane near San Diego's North Island Naval Air Station during Navy parachute jumping maneuvers and found himself dangling thousands of feet in mid-air, when his parachute fouled in the tail gear of the giant transport. After frantic attempts had been made to save the man by either pulling him aboard or cutting him free to use his auxiliary chute, Lieutenant W. W. Lowrey, who had been watching the mid-air drama, yelled to Radio Operator J. R. McCants, hopped into a Curtiss SBC-3 dive-bomber and roared aloft strictly against orders. Adept maneuvering brought him up under the tail of the transport where McCants hauled Osipoff aboard. Lowrey then nosed up and cut the parachute shroud lines with his propeller and the three men landed safely. In the face of this violation of orders, Naval high command officers had an embarrassing time trying to figure out whether to prosecute or praise when the problem was solved: a recommendation for decoration for heroism arrived from Secretary of Navy Frank Knox!

Meteorologists and engineers are now receiving their commission as ensigns in the Navy in accordance with a new policy which permits graduates of the Civil Aeronautics Administration pilot training course to take further studies at M.I.T., C.I.T., and the University of Chicago, after which they are accepted as officers in the Navy.

Another "every-day occurrence served to make the headlines of metropolitan newspapers when Ensign H. E. Tennes of the

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J. Spokane & Co.
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Aircraft Carrier *Saratoga* found himself aloft in a tricky little Grumman F4F-1 single-seat fighter with a badly damaged landing gear. Following radiod orders he set the ship down into the ocean and both he and his mount were hauled to safety undamaged.

PRODUCTION—Enough artificial light to make brilliant a city of 40,000 population will be used by the Douglas Long Beach Division plant upon completion. Constructed entirely without windows or skylights, the black-out plant will be illuminated as bright as day on the interior by fluorescent lighting. It will take 5000 kilowatts of power to keep this immense system in operation.

Frank Der Yuen, young Chinese grad-

uate of M.I.T. has been appointed Chief Engineer of Harlow Aircraft Company according to a recent statement from Mr. E. M. Allison, company president. Formerly advisor to the commission of aviation affairs of the Chinese Republic, Allison has reasons for believing in China's engineering sons and thus the appointment. Yuen had a brilliant record while at the Technical school and his career will be watched with interest by Americans.

Igor Sikorsky has established an helicopter-seaplane record. Equipping his famous contraption, the Vought-Sikorsky VS-300, with large rubber floats to provide a floating platform, he took off from the waters of Cape Cod and hovered in the air nearly an hour.

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WITH a climb as fast and steep as its name implies, and its long, flat, graceful glide, Comet's INTERCEPTOR Gas Model has proved itself a champion in any competition! Its remarkable features have been tested and proven in over two years of experimentation, and Carl Goldberg has put into its design all the skill and sound engineering which have made his other Comet gas models leaders in their fields!

New, simplified construction methods make the INTERCEPTOR a "cinch" to build. Unusual structural design makes it inherently light in weight, yet rugged enough to "take it".

The kit is chock-full of finished parts—finished firewall and other plywood parts, wing and elevator ribs accurately cut with master dies, ready-formed landing strut, plenty of colored tissue, even colored decals including large army stars! Kit contains plans for Class "A" and Class "B", and sufficient materials to build either one.

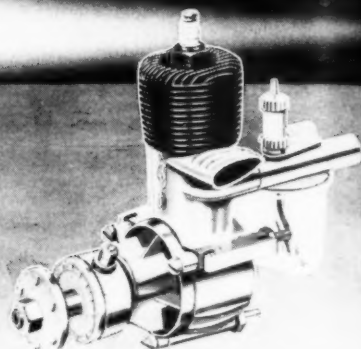
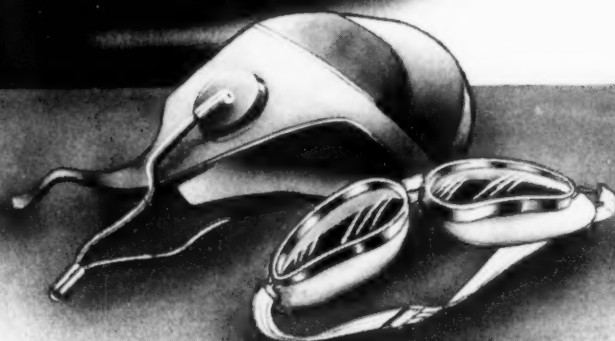
Class "A" wingspan—42 in. Class "B" wingspan—48 in. Can be used with any Class "A" or "B" motor. Order from dealer and save postage; otherwise **\$2⁵⁰** add 25c. Kit No. T14.....

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MODEL FLYING COMES OF AGE

AS sure as the sun rises, the factors in tomorrow's Aviation will be the model flyers of today.

Igor Sikorsky, Donald Douglas, Jack Northrop—these are a few of Aviation's leaders who were once model builders—"crazy kids with a yen to fly model airplanes." And there's also that lead man on the wing assembly for Lockheed P-38's and the thousands of other model-trained men and young men who are performing important work in the designing, drafting, and production departments of aircraft companies throughout the country.

Writing of the need for permanent American defense, as opposed to mere emergency preparedness, the national weekly, *Liberty*, said in a recent editorial:

"... the time has come to begin to air-condition the next generation of Americans. Without further delay, *Liberty* believes we should construct a clear, practicable program and put it into effect.

"Knowing the object to be achieved—to air-condition young America—it is not difficult now to move toward certain immediate objectives.

"We should begin, in the youngest grades of school, to teach small boys and girls to make airplane models. A kit for every child should be provided. Thus, in their earliest school life, American children will begin to understand the mysteries of airplane construction and operation ... mastering more complex problems from year to year."

Even the European countries engaged in this terrific battle have seen fit to continue building miniature airplanes and to encourage their youth in

model flying. Other American editors, educators, and civilian and military leaders are voicing the same opinion as *Liberty's* editor—that American preparedness should be a permanent, not a short-time program.

As builders of miniature precision motors, the Ohlsson and Rice organization feels that it is playing a definite part in National Defense, both present and future. Certainly we have back orders unfilled. So has Lockheed. So has Douglas. So have Pratt and Whitney, Consolidated, and Curtiss-Wright. Thousands of back orders which they are producing as fast as they can.

Ohlsson and Rice are also expanding production as rapidly as possible, working on two shifts, and no model-engine producer has greater equipment, facilities, or experience for the production of miniature aircraft engines. Every part of Ohlsson motors (except spark plugs) is built here in our own shops to one standard of quality under one "precision control" manufacturing process.

And this is the established Ohlsson and Rice policy—which modelers now know—to provide only the finest quality miniature engines—for better performance, more valuable experience, and more useful air-knowledge for the future of our country.

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